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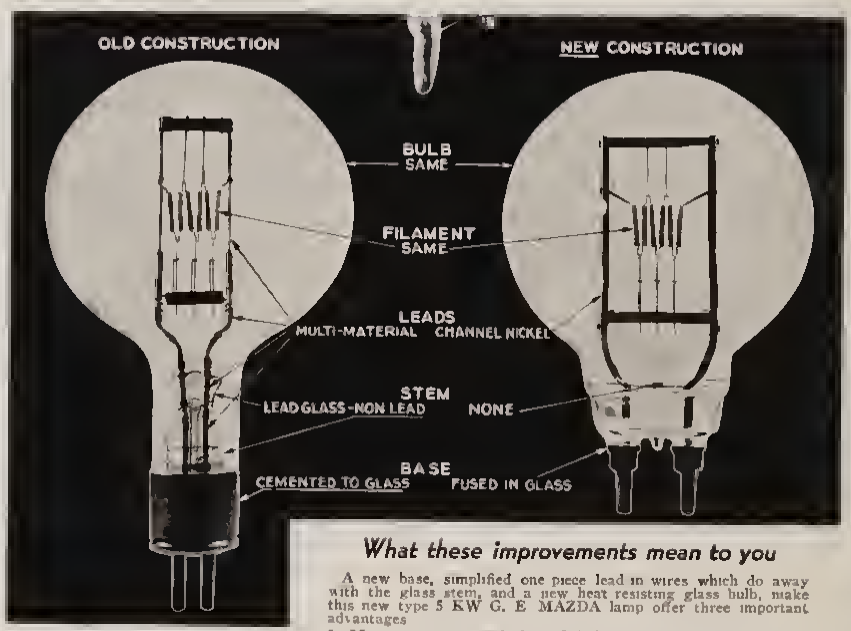
What to Read

ESTABLISHED 1918. Advertising Rates on application. Subscription U S $3.00 a year; Canada $3.50 a year, Foreign $4.00 a year, single copies 25c.

The Staff

• General Electric Laboratories Upset Tradition!

• *Simplified lamp design revolutionizes high wattage lighting.*



What these improvements mean to you

A new base, simplified one piece lead in wires which do away with the glass stem, and a new heat resisting glass bulb, make this new type 5 KW G. E. MAZDA lamp offer three important advantages

1. More accurate positioning of light source with reference to reflectors and lenses.
2. Gives a stronger, more rugged lamp, better able to withstand the severe service encountered in studio lighting
3. More compact storage in limited studio quarters, since this new lamp is lighter in weight and shorter in length

SINCE the days of Thomas Edison, lamps have been built around a glass stem, with the attachment of the base as the final step. To follow the same plan of design and construction, when movies first called for high wattage lamps, was natural.

Now the Nela Park Laboratories of General Electric Company have upset tradition! They have developed a new, simplified design for high power lamps which completely reverses established lamp construction formulas, by *beginning* with the base, *and which produces a stronger more accurate lamp for your use!*

Improvement of existing types of G. E. MAZDA lamps —*to fit your operating conditions*—is the work of only one group of G. E. scientists. Another group works earnestly on the development of new lamps to cope with motion picture lighting needs of the future—needs with which General Electric is familiar through close contact with the studios. And still another group checks the microscopically accurate manufacture of G. E. MAZDA lamps by testing them in use.

Such care enables General Electric to offer a complete line of lamps, standard in quality and meeting every cinematographic need. No wonder the use of G. E. MAZDA lamps on movie lots is continually growing. General Electric Company, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC

MAZDA LAMPS

THE AMERICAN SOCIETY OF CINEMATOGRAPHERS was founded in 1918 for the purpose of bringing into closer confederation and cooperation all those leaders in the cinematographic art and science whose aim is and ever will be to strive for pre-eminence in artistic perfection and technical mastery of this art and science. Its purpose is to further the artistic and scientific advancement of the cinema and its allied crafts through unceasing research and experimentation as well as through bringing the artists and the scientists of cinematography into more intimate fellowship. To this end, its membership is composed of the outstanding cinematographers of the world, with Associate and Honorary memberships bestowed upon those who, though not active cinematographers, are engaged none the less in kindred pursuits, and who have, by their achievements, contributed outstandingly to the progress of cinematography as an Art or as a Science. To further these lofty aims, and to fittingly chronicle the progress of cinematography, the Society's publication, The American Cinematographer, is dedicated.

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A
Leica
Enlargement

April Showers

by
Jackson Rose
A.S.C.

This study made by Cinematographer Rose has been hung in four exhibitions First International Salon of Photographic Art Milwaukee, Wis , All American Photographic Salon, Los Angeles, Canadian National Exhibit, Toronto, Canada and German International Photo Exhibit Leipzig

Evolution

Blimp Triped assembly designed by Paramount studios.

THE PAST decade has seen amazing developments in every type of cinemachinery—not alone in the field of such major units as cameras, lights and recording apparatus, but in almost every conceivable accessory, as well. Too many of these accessory developments have gone unrecorded because popular attention has been so centered on the developments (actual and anticipated) of major units such as cameras and recorders. Nevertheless, one of the most interesting, as well as one of the most important chapters in the evolution of modern cinemachinery has been the evolution of the tripod during the past ten years.

It would be wrong to impute all of the changes that have taken place in tripod design to the requirements of sound. Admittedly, these have played a large part, but by no means a predominant one, for when sound was first introduced, motion picture tripod-design was already undergoing basic and far-reaching changes which had been caused primarily by the development of a new conception of cinematic technique.

To understand the problem, one must begin by going back from effects to causes. In this instance, the cause was the gradual awakening of directors and cinematographers everywhere to the fact that the film as an artistic medium must be dynamic rather than static; that a certain freedom and fluidity could be given a picture by the judicious application of what one well-known critic has termed "filmic motion"—physical motion of the camera, which enables the eye of the spectator to become a more active participant in the narration of the story. To this end, a great deal more freedom in the normal panoramic and tilting movements of the camera became essential, and in natural sequence, the development of the moving-camera technique followed. During the first few months of sound-pictures, this technique passed into temporary eclipse, due simply to the physical restrictions momentarily imposed by the crude equipment and unknown technique of the new medium, but these have passed, and motion pictures are today enjoying a greater freedom of physical movement than ever before.

In the earliest days of the cinema, the tripod represented merely a rigid support for the camera. The technique of the period knew no motion, nor any set-up but the simple long-shot. For this purpose tripods which were merely greatly-enlarged replicas of the familiar still-camera tripods sufficed. As the possibilities of panoramic and tilting motion asserted themselves, the familiar crank-operated, worm-geared pan-and-tilt heads were quickly developed. At the same time, the bulk and weight of professional cameras were reduced, and the need for mobility developed light, yet strong tripods, fitted with various types of quickly-adjustable legs. In the earlier tripods, it will be remembered, the telescoping legs were usually held in place by four set-screw clamps. This number was soon reduced to two, and eventually to a single member by which the clamps on both segments of the leg could be operated by a single movement of one hand, which would also serve to extend or shorten the extension of the leg. This type of lock was apparently pioneered by Mitchell, both in their own tripods and in legs which were fitted to tripods of many other makes.

About this time the professional colony discovered the possibilities of the Akeley camera, with its unique gyroscopically-controlled pan-and-tilt movements, which made panning and tilting absolutely smooth regardless of the speed. The Akeley camera, it will be remembered, had been invented some years before by the renowned explorer and anthropologist, the late Carl Akeley, for his own use in making motion pictures of the wild-life of Africa. The essential principle (aside from the unique construction of the camera itself) was the application of the gyro principle, by which a heavy flywheel furnished a perfectly uniform resistence to panning or tilting movements of the camera, and thereby insured absolute steadiness, with perfectly uniform acceleration and deceleration at the start and stop of such movements, as well as permitting the camera to follow extremely rapid movements with the utmost accuracy. In this design, apparently for the first time, the movement of the camera was controlled by a single handle rather than by two cranks.* The Akeley camera was used to a considerable extent during the war, and thereafter became very popular with newsreel cameramen. In due time, it was found useful for the making of special scenes in dramatic films, and a group of cinematographers, such as the late Burton Steene, A.S.C., Elmer G. Dyer, A.S.C., Harry Perry, A.S.C., and others, came to specialize in Akeley camerawork. As has been said, these Akeley Specialists did not by any means confine their activities to the making of aerial and other "stunt" sequences, but worked on all types of studio scenes in which accurate following of a moving subject was essential.

It was therefore inevitable that sooner or later the old-type crank-driven tripod head would be supplanted by some simple mechanism which would at least approach the flexibility of the Akeley gyro-head. Probably the first of these devices was the "Trueball" tripod-head, made by Fred Hoefner, the well-known Hollywood camera-machinist,

*(A somewhat similar design was marketed in 1911 by Eberhard Schneider, of New York, but was not, for various reasons, commercially successful.)

# of Cinema Tripods for Studio Use

by

William Stull, A.S.C.

Top, Baby Tripod for use with blimps takes regular blimp tripod head. Bottom, Mole-Richardson Rolling Tripod, developed from M.G.M type designed by John Arnold, A.S.C.

and adapted to either the Bell and Howell or Mitchell camera; in either case, the Hoefner head simply replaced the regular tripod-head. Its essential principle is that of the ball-and-socket universal-joint; the regulating tension is by friction, and is adjustable. Like the Akeley tripod, the movement is produced by a long handle, in this case projecting from the left-hand side of the tripod-head, and fitted with a quickly operated release, so that it may be swung down out of the way when loading or focusing the camera, without disturbing the position of the camera or the tension. The Paramount Studio developed a similar ball-and-socket type of friction-head, and the Mitchell Camera Co. introduced a design which achieved the same end, but employed large friction-bearings, with adjustable tension, for the regulatory braking. Notwithstanding considerable opposition on the part of the Akeley contingent, these friction or "slip-heads" as they were called, have become universally adopted throughout the industry. Akeley introduced a modification of their regular gyro-tripod for use with other cameras, but met with little success in the studio field, due largely to the growling noise inherent to the train of gearing used in this design, which, of course, precluded its use in sound-work. On the other hand, the Akeley head has become extremely popular in newsreel work, even in the case of sound newsreels.

Practically coincidental with the development of the friction-controlled tripod head, the industry adopted the talking picture. For the moment, naturally, tripods became a minor consideration. The earliest talking pictures, it will be remembered, were photographed with the same type of cameras used for silent production, enclosed in large, sound-proof camera-booths which were speedily dubbed "ice-boxes." In the earliest designs, the camera stood on an ordinary tripod, but in the later ones, the camera (or cameras) was mounted on a regular tripod-head which was, in turn, placed on an adjustable shelf running across the front of the booth.

During this period, important changes were being made in the cameras themselves, 1000-ft. magazines were standardized, the gearing, bearings, etc. were re-designed to minimize the noise of operation, and synchronous motors were added to drive the camera. At the same time various ingenious individuals evolved sound-proof coverings which, though relatively large and inconvenient, nevertheless were sufficiently sound-absorptive to do away with the need of the restricting booths. These "Blimps," "Bungalows," and "Baby Booths" were of a wide variety of designs and materials; all of them bulky and heavy, when compared to a simple camera. The average size is perhaps thirty inches square, and weighs over four hundred pounds.

The then-existing tripods were designed to cope with a load rarely exceeding eighty pounds—and often considerably less. In consequence, tripods had to be radically re-designed.

The design of this new equipment has taken two distinct courses: in the first instance, enlarged standard tripods, sometimes fitted with wheels for greater portability; and in the second instance entirely new designs capable of use either as rigid camera-stands or for some types of moving-camera shots, and generically termed "rolling tripods." At the same time, a great deal of development has occurred in bringing forth an entirely new class of mobile camera-supports, such as perambulators, dollies, cranes and booms, for the exclusive purpose of making possible the many types of moving camera scenes required by modern technique. The latter, however, must be discussed separately, at some later date.

Of the first class, the principal type is that evolved by Virgil Miller and the mechanical staff of the Paramount Studio, and in daily use there and at the Fox, R-K-O and other studios. Essentially it is a heavy, wooden-legged tripod of conventional design, equipped with a friction-head large enough to handle the weight and bulk of blimps, and fitted with small, retractible wheels for greater portability.

As will be seen from the illustrations, this wheel assembly is virtually a second tripod placed directly under the wooden legs of the tripod proper, and constructed of steel tubing. It is connected with the tripod proper by means of a screw-jack hoist and three telescoping

Continued on Page 34

New Automatic Mixing Panel designed by "ArtReeves"

New "ArtReeves" Automatic Mixing Panel

By

Harold McNiff,

Chief Engineer
Hollywood Motion Picture Equipment Co

THAT a system which would automatically control the level of one circuit in favor of another in re-recording would be a welcome addition to the sound equipment of every studio, has long been a recognized fact

The problem in handling this phase of work in the studios usually centers in the procedure of controlling voice and music on background sound effects simultaneously

The uncertainties of the duration and intensity of the voice has always been a problem to the operator While he might have the advantage of the script, still he had the human quality to contend with which is always influenced by the emotion of the occasion or the interpretation of the individual The proper level at which to record the background was a trial and error procedure in an effort to frequently outguess the individual supplying the voice sequence

The manual system where the mixer has a voice track coming in to one mixing position and a microphone picking up the music to a second position is still the favored method in most of the studios in Hollywood While not wishing to appear as an exponent of Technocracy, the human element introduced in this system often leads to retakes due to the levels not being right This method has been in use almost since the inception of sound and its advantages and disadvantages are too well known to require discussion One would infer from this that a system which automatically makes one circuit predominate at all times over another would have a large field of usefulness in the motion picture industry

A compact unit to perform this task was recently completed by the Hollywood Motion Picture Equipment Company It operates on the principle that one circuit predominates over and controls another circuit When a signal is impressed on the controlling circuit the volume of signal in the controlled circuit is reduced or completely blotted out, depending on the strength of the control signal and the adjustment of the controlling circuit

The unit is complete in itself, supplying its own filament plate and bias voltages and plugs directly into the 110 volt A C line, thus making it entirely independent of the rest of the recording system It, of course, could be built to use the regular system filament and plate batteries The present equipment was designed and built to fit in the regular line of "Art Reeve" portable sound equipment The component parts are mounted on a 19 inch x 12¼ inches Dural panel and is so designed and drilled that it may be mounted in a portable case or fastened to a standard relay rack

For ease of setting up, the automatic mixer is equipped with the small type "P" Cannon plugs

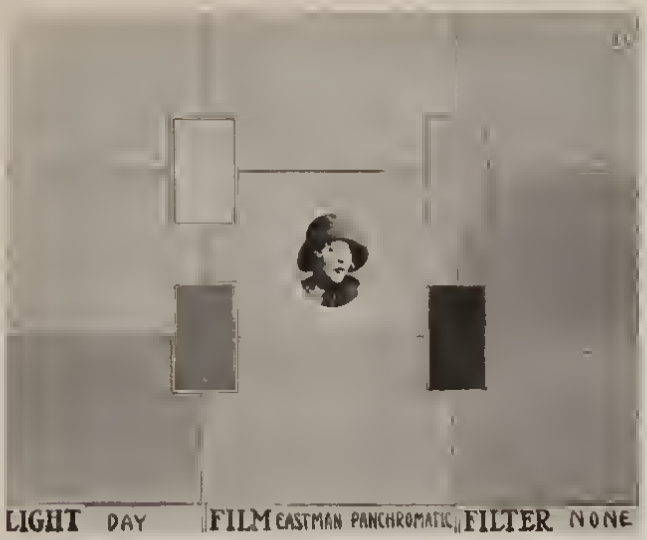
In operation the music source is plugged into the controlled circuit and the microphone or voice track into the controlling circuit The outputs of these are plugged into the regular input positions on the manual mixing panel By varying the regular mixing control knobs any desired balance between the level of the two circuits may be obtained A knob on the automatic mixer provides for any degree of fading of the controlled circuit which may be wanted or needed

The usefulness of this device is not wholly limited to the motion picture industry, but would also be a very handy unit for use in electrical transcription and broadcast work It automatically eliminates the possibility of the music or background sound effects from blotting out the voice This in turn saves the expense and trouble of retakes or prevents the program from being ruined by the loss of important speech In broadcast work care must be taken that the controlling microphone doesn't pickup too much of the rest of the sounds in the studio or the desired effect would be lost

With its instantaneous action this equipment is a positive control at all times Reducing instantaneously the background noise the moment the voice is recorded on the microphone hooked in for the voice It would seem evident that the sound fraternity would immediately recognize the convenience this represents, not only in the handling of this type of recording, but also in the positiveness of its action and in the loss of waste time and recording film

Neither of the circuits, however, are running "wild," the usual controls are given both circuits to establish the proper level This level once having been decided upon it is not necessary to make further adjustment, unless there is a definite purpose for doing so because of effect, or that the speaker might be raising his voice beyond the level first registered

Possibly this will find its greatest use in re-recording so far as the studios are concerned The radio stations, however, will find a greater range in which to employ this innovation, especially in the broadcasting of sports and other events, where background noises, subdued are not objectionable, but frequently add to the interest, with the background noise coming to full volume immediately when the announcer stops his description of the event



Each large square represents a different shade of blue, the small squares top, left to right, were white, light grey, bottom dark grey and black. This is the black and white translation of these various blue shades

Cameramen Need New Viewing Glass

Says

Jackson Rose, A.S.C.

THERE is one accessory in the requirements of the cameraman that has been — let's say — overlooked by those supplying our needs. That is a proper viewing glass.

While it is true there are many viewing glasses available, there are no two alike, nor does any glass on the market give us a neutral color rendition or a true rendition of the hues in the monotone, or rather the true tonal values of colors photographed as they will appear on the screen.

I have seen at least fifteen glasses that range in color from light blue to deep reddish-green, but none give a black and white interpretation of the color. Their translation is in the intensification or subduing of the color itself.

If there were really some very correct way in which one could in turn interpret this translation given by the present glasses, then we would be able to make instant decisions and important decisions before we expose the film.

Of course, we use these glasses which are available, but we must use them judiciously and backed by our years of experience in photographing colored objects. Our judgment must tell us just what shade of black the color will give us, how it will contrast with the surrounding colors, or whether it will photograph identically with some other color in the scene.

And still this experience of equally good cinematographers may cause them to give absolutely opposite opinions in some cases. This fact was forcefully demonstrated on a recent occasion while I was photographing a large set in one of my productions. This particular set had a number of green velvet drapes hung about the background. A fellow cameraman came on the stage to view this set. I asked for his opinion as to how the green velvet would photograph, he ventured the opinion they would go rather dark, while I contended they would photograph light, because the glass I was looking through showed that result. However, the next day the screen proved we were both wrong. They photographed neither dark nor light, but grey. Neither of us knew how much blue or yellow that particular green contained, but with a proper glass we would have known the result and would not have had to guess. The same is true of other colors. The adding of a filter for any color changes the results and only your past experience will tell what results to expect.

Some cameramen place the filter they are to use in front of the viewing glass and look through the two of them in order to try to guess what their result will be. In the final analysis it is their past experience with that particular filter they rely upon. The preferences of cameramen in viewing glasses vary. Some use the standard yellow glass, others like to add a neutral density gelatin to this glass, but I am at a loss to understand how any one can judge the true color values when looking through a colored piece of glass because it turns all colors looked at to the color of the glass and one has, after all, to depend upon his judgment and past experience as to just what to expect from such a glass. I have used all of them, light, dark, medium and bright, as well as blue, green, purple and yellow, and I still cannot see how the monotone may be judged when looking through any such glasses.

The request for a viewing glass that will give the proper results when used upon any film or with any filter or in any kind of light may seem radical, in fact one might say impossible, but I differ with them for it will be a difficult task but not impossible. It will take a mixture and combination of colors, glass, formula, science and a great deal of experimenting, but it's these visionary things that have brought the progress in cinematography today, a progress that has been greater than almost any other science.

When we review the progress in lenses, from the pinhole to the meniscus, to the rectilinear and then the anastigmat until we reach the speed lenses that work at an aperture of F 0.99 we can realize what can be accomplished. When we review the various steps of film manufacture from the old slow working orthochromatic to the super-sensitive special panchromatic we can appreciate that progress.

When Ernst Abbe of Zeiss fame set out to develop the anastigmat lens he was confronted with the problem of requiring special glass which was not in existence. His research in a glass laboratory at Jena is now history. The results of this research are now in use in every high grade lens.

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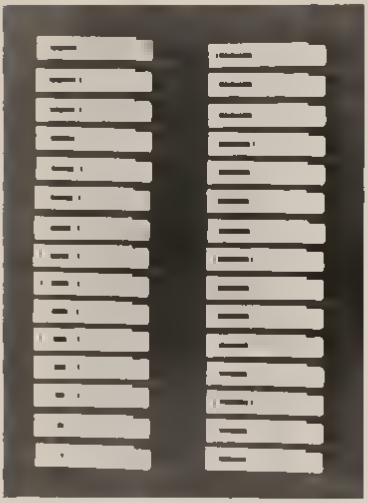
New B. & H.



Set of masks for making matte film for B & H Automatic Printer

THE methods of processing motion picture films have undergone a complete transformation since the introduction of sound pictures, and are now definitely dependent upon systematic control This control is based upon the knowledge acquired through painstaking scientific investigations of the characteristics and behavior of sensitive emulsions and their development under all conceivable conditions of treatment

The essential technical requisites of a film printer suitable to modern film processing can be summarized as follows

(a) Continuous in operation, for the sound track is recorded as a continuous band

(b) Perfect smoothness of running, and control of errors due to film slippage and creepage at the printing aperture

(c) Perfect contact of negative and positive films at the printing aperture

(d) Easy control of printing light intensity level

(e) Geometric progression of the printing light steps (exposures) to permit correct plotting of the film characteristic curve for sensitometric control

(f) Means for rapid and accurate Gamma determination and density control

Requisites of a commercial nature may be listed as follows

(a) Speed of operation consistent with quality product

(b) Protection for both negative and positive films against wear and tear, scratchings, abrasions, dust, etc

(c) Elimination of film and time wastage

(d) Reduction of the need of personal attention, with inherent reduction of possible errors due to excessive dependence upon the human element

(a) With the new Bell & Howell Printer, the film runs with a continuous and uniform motion controlled by a method based upon the same principles employed by its predecessor, the B & H Model D Continuous Printer Incorporated are refinements of design and manufacture dictated by the experience acquired during the many years in which the Model D Printer has been used as standard equipment in practically all the major laboratories throughout the world

(b) Smoothness of running is secured in the new printer through the use of a synchronous motor and a direct worm and gear drive which eliminates all beltings, through a perfectly balanced mechanical filter, and by extremely careful design and manufacture of the main sprockets, the diameter of which and the shape and pitch of their 64 teeth are so calculated as to insure perfect registration with regard to possible lateral displacement of either positive or negative film and to reduce to extremely small tolerances the unavoidable departures from the ideal condition of longitudinal register

Since films are subject to uncontrollable shrinkage, it is a physical impossibility entirely to eliminate the possibility for the positive film to run with some retard or advance as compared with the motion of the negative film These differences, known as creepage and slippage, can, however, be kept within very small tolerances (1) through a careful calculation of the arc described by the two films at the sprocket's periphery, and (2) by the bringing into register the face of each pair of perforations of the negative film with the faces of each pair of perforations of the positive film, just before that portion of the film reaches the printing aperture, and also (3) through a perfect control of film tension, which must be balanced and uniform for both negative and positive films to eliminate the possibility of destroying the effectiveness of the arrangement devised for the control of film slippage and creepage at the printing aperture

(c) Perfect contact between negative and positive films is accomplished by air pressure exerted upon the back (base side) of both the negative and the positive films This arrangement has a further advantage over that of insuring film contact Both films are traveling at the printer gate between two cushions of air and are, therefore, not in direct contact with either the aperture jaws or the printing gate, thus eliminating all possibilities of scratches or abrasions which may occur if the films were frictioning against any of the stationary metallic elements of the machine

(d) The printing aperture, which is a constant element of the determination of exposure, is evidently of great importance Painstaking investigations have been conducted in order to determine its most efficient width for both picture and sound track printing

It is also quite evident that the illumination of the printing aperture must be perfectly even throughout its area and its intensity controllable at instant notice so as to compensate for variations in positive film emulsion speed and in conditions of the developing solutions

An accurately designed and mounted optical system distributes the light emanated by the printing lamps to the printing apertures so that the whole of their areas is extremely evenly illuminated with diffused light Exposure is therefore equal for each and every point of the printing area

The proper intensity of the printing light can be secured either by rheostatic control or by means of a mechanical

Automatic Sound and Picture Printer

by

J. A. Dubray, A.S.C.

variable slit which acts as a diaphragm carefully calibrated Either method can be used with equal success depending on the installation existent in any particular laboratory with regard to the accuracy of voltage control of the electric current that is fed to the printing lamps

(e) Once the printing light of proper distribution, quality, and intensity is secured at the printing aperture, means must be devised to control its flux, in order to compensate for differences in the overall density of the negatives to be printed

It is customary practice to determine a minimum light flux necessary to overcome the inertia of positive film, that is a flux of light necessary to produce a measurable amount of silver deposit on the developed film, and to divide the available light flux, up to its maximum, in a series of steps commonly known as "printing light steps". It is quite evident that the progression of these steps must be in accordance with the method used for determining the characteristic (Gamma) curve of the positive film

Since Gamma is determined by plotting density against log exposure, it is essential that a geometric progression be secured for the light steps corresponding to the straight portion of the characteristic curve of the film used In the new Bell & Howell Printer, the proper light steps are secured by automatically interposing mattes between the light radiations and the films The transparent area of each matte is so calculated that each matte transmits eight per cent more light than the preceding one These mattes are thirty in number, affording an overall range of illumination at the printing aperture in a ratio of one to approximately fifteen This very wide range of light changes is more than sufficient to cope with the most extreme variations in negative overall density The versatility of this light changes system is so great that it is possible to secure light changes of the proper progression even in cases in which either the "toe" or the "shoulder" of the characteristic positive film curve are made use of, as is practiced in some laboratories

(f) Having thus provided for the essential requisites of the mechanical handling of the film in processing, it was essential to adopt means by which the facilities afforded could be used with rapidity while retaining assurance of control of "gamma" and "density"

In order to thread both the negative and the light change mattes (which are made of positive film and assembled so that their length is exactly one-fourth that of the negative) leaders and trailers are used They employ such markings as are necessary to insure proper synchronism between the sound and the picture records In the negative leader or trailer are inserted small lengths of opaque film, perforated with round holes of proper dimension and properly spaced In the matte leader or trailer, at a place corresponding to that of the perforated films, are inserted mattes of predetermined light transmission The light radiations transmitted through these mattes expose the portion of the positive film that is in contact with the perforated portion of the negative leader or trailer

After development, the densities for the different exposures thus obtained are read, Gamma is determined, and the readings of the density obtained with carefully predetermined exposures indicate if any changes are necessary either in the printing light intensity level, or in the operating speed of the developing machine, or if the developer demands to be "sweetened" or "boosted" These readings are easily charted, and the operator can at a glance decide upon the necessary corrections The procedure is extremely rapid and accurate and readings can be made for each print that passes through the developing process, thus insuring absolute constancy of results

It is impossible to describe fully, in an article of the scope of this one, the principles upon which the above briefly outlined system of control is based, and the advantages that are to be derived through the absolute elimination of the human element and visual inspection

Requirements of a commercial nature have also been taken into painstaking consideration in the designing of the new printer

(a) Actual practice and exhaustive experiments have proved that the maximum speed at which films should be printed for best possible results is sixty feet per minute Therefore the B. & H Printer is regularly equipped with a drive to operate at that speed However, if any laboratory should give preference to a higher speed of operation, the machine can be constructed so as to answer individual

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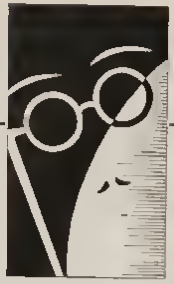
B. & H. fully Automatic Printer showing dust proof doors which protect negatives and matte films.



PHOTOGRAPHY of the MONTH

"THE REBEL"

photographed by **Sepp Allgeier, Albert Benitz and Willi Goldberger.**

If you saw "Pitz Palu" and 'The Doomed Battalion ("Birge in Flammen"), you have some idea of the treat that is in store for you in "The Rebel," which was photographed by the same artists. In any event, no lover of exquisite exterior cinematography should miss this fine German-made production For professional and amateur alike it offers not merely entertainment but profound lessons in the photography of exterior scenes The more mechanical phases of these scenes—such as filtering—are naturally excellent, but the film's chief attraction is the intensely dynamic, virile quality of the compositions In this phase, the camerawork of "The Rebel" has never been excelled, and seldom (if ever) approached The manner in which the human protagonists of these scenes have been worked into the composition in such a way that, while the dramatic import of their actions is never lost, they are none the less dwarfed by the immensity of the setting (the Tyrolean Alps), is tremendously effective, and merits careful study Many of the closer shots show the same virility, especially some closeups of the star, Luis Trenker, in which a big-head closeup of the man's right profile is deliberately thrown far to the left-hand side of the picture, with nothing but heavily-filtered sky for background The result, like much of the rest of the picture, is superb in its aggressive unconventionality The chase scenes early in the picture are also noteworthy, as is also the battle sequences at the climax Even we of Hollywood—who have been doing this sort of sequence for twenty or thirty years—can learn a great deal from MM Allgeier, Benitz and Goldberger

It is unfortunate, however, that the intimate scenes (both exterior and interior) of this production fall far below the superb standard set by the main body of the production The treatment is not so sure, and there are many technical discrepancies, especially in the matter of makeup, which is very bad There is also a sequence of night-effect scenes in the early part of the picture which was most lacking in uniformity, and which was also printed much too dark Tinted-base stock would have improved it greatly The recording was quite the worst heard in years

"KING OF THE JUNGLE"

photographed by **Ernest Haller, A.S.C.**

While this production does not by any means show Cinematographer Haller's best work, it is nevertheless a very competently-photographed picture It was made under considerable difficulties—photographic, directorial, story and otherwise—which added greatly to Haller's burden. He is to be commended for some very effective work, even though the more captious critic might wonder why he did not strike a more highly idealized mood in his treatment of so imaginative a story

The process work of Farciot Edouart is, as usual, excellent, and adds immensely to the dramatic punch of the story It also must have added a great deal to the comfort (physical and mental) of the players, who would otherwise have had the unpleasant assignment of playing many of their scenes in too great intimacy with a large group of lions, tigers, and other pleasant pets

"PICK-UP"

photographed by **David Abel, A.S.C.**

Professionally speaking, most of this production is strictly routine work, with little opportunity for any particularly pictorial work None the less, Cinematographer Abel has done his usual workmanlike job, and, in the process, given a number of valuable pointers to the discerning amateur In the early sequences, for instance, a great deal of action takes place in sets designed to represent the cramped, uninviting rooms of a cheap boarding-house or flat Abel has very effectively added to this impression by utilizing various pieces of furniture—notably a large table-lamp—in the immediate foreground of many shots This lamp is out of focus, and is worked into the composition in such a way as to add to the cramped feeling He has also, later in the picture, given some very interesting interior night-effects on the surprising background of a very light-colored bed-room set

"STRICTLY PERSONAL"

photographed by **Milton Krasner.**

"Strictly Personal" marks the debut of a newcomer to the ranks of First Cinematographers—Milton Krasner, who has served his apprenticeship as a second cinematographer to excellent advantage In this, his first assignment as a full-fledged Director of Photography, he has lent a great deal of beauty, dramatic value and effectiveness to what would otherwise have been a strictly routine film Amateurs will find a great deal of interest in some of his scenes—especially some night-effect closeups of "Bill," in which his face is momentarily revealed by the glow of the matches with which he lights his cigarette Professionals, too, will be interested in Krasner's work, which shows great promise

"DESTINATION UNKNOWN"

photographed by **Edward J. Snyder, A.S.C.**

This production is one of the best opportunities Edward Snyder has had in a long time, and he has made the most of it. His treatment is well-nigh flawless technically excellent, pictorial wherever possible, and adhering perfectly to the mood of the story at all times. Cinematographer Snyder is to be congratulated upon this picture

"THE BIG CAGE"

photographed by **George Robinson.**

'The Big Cage" is doubly surprising, for in addition to offering an interesting story, it offers photography far better than could be expected in consideration of the fact that practically all of the action is played in a circus The process work is excellent, for which John Fulton is requested to take a bow, while Robinson and the un-credited Akeley

The "Camera Light" shown on the camera blimp in this picture was designed by David Abel, A.S.C., and first used in photographing "Pick Up". It uses a 500-Watt tubular frosted globe, and insures even face-lighting for close-ups and trucking shots.

camera specialist deserve a pair of Walter Winchell's best orchids for their sensational treatment of the action scenes—especially the spectacular battle between the lion and the tiger. Their camerawork adds immeasurably to the effectiveness of this sequence. Incidentally, they have revealed more unreservedly devilish expressions on the face of My Lord, the Tiger, than one could believe possible. Karloff at his worst is benign in comparison!

"MURDERS IN THE ZOO"

photographed by **Ernest Haller, A.S.C.**

In this production, Haller offers a very effectively photographed mystery picture, played largely against the unusual background of a big zoo. The production can hardly be recommended to anyone with squeamish nerves—but it is interesting photographically. Especially interesting is a sequence played in a medical research-laboratory, in which Haller has achieved some interesting mystery-effect lightings in a remarkably high key.

"THE FACE IN THE SKY"

photographed by **Lee Garmes**

"The Face in the Sky" offers a treat for lovers of the pictorial in cinematography. Photographed by Lee Garmes, winner of the 1932 Academy Award for cinematography, and directed by Harry Lachman, a distinguished artist with both brush and still camera as well as one of Europe's outstanding directors, this production bears the unmistakable stamp of whole-hearted, camera-minded cooperation between the two. It is undoubtedly one of the most completely pictorial films released in a long while; every scene is a perfect composition, perfectly photographed.

A great part of this production—the earlier sequences—consists of unusually pictorial exteriors, as the early action takes place in an idealized Southern backwoods district. The change in both the mood of the photography and the design of the settings for the latter part of the picture, which uses modern New York as a background, very cleverly (and subtly) aids in pointing the dramatic conflict between these two locales and their people.

The mechanics of "The Face in the Sky" are notably smooth. The transitions between sequences and for time and space changes are especially good—smooth, rhythmic, well-conceived, and never obvious. The use of the moving-camera technique is also in unusually good taste. The industry needs more directors who, like Lachman, understand not alone the dramatic requirements of the cinema but also its pictorial principles, men who will not only allow their cinematographers to do their best work, but who will actively aid them to produce great cinematography. The combination of Lee Garmes and Harry Lachman is certainly a fine one, and it is to be hoped that they will be together again, and assigned to more pretentious enterprises than this excellent little program film.

"A LADY'S PROFESSION"

photographed by **Gilbert Warrenton, A.S.C.**

This is a very smoothly photographed little comedy, which, while it puts no spectacular opportunities before Warrenton's lens, none the less shows that he has taken full advantage of the material at hand. "A Lady's Profession" is the type of picture which demands a high quality of photographic good taste, and Warrenton's treatment shows this to perfection, never intruding on the story, but enhancing the atmosphere of quality which must pervade such a production.

"SHE DONE HIM WRONG"

photographed by **Charles Lang, A.S.C.**

One would hardly expect this bawdy panorama of life in the "gay nineties" to offer any outstanding opportunities to the cinematographer; yet Charles Lang, A.S.C., has again proven his innate artistic talent by making "She Done Him Wrong" richly pictorial as well as thoroughly atmospheric. He reveals all of the ornate "gingerbready" architecture and decors of the mauve decade, yet invests his scenes with a soft quality and with photogenic compositions which are distinctly—though not disturbingly—modern. The result is very pleasing. The costumer and art director on this production are also deserving of much praise for their work in establishing the required physical atmosphere of the production. One wonders, however, if it were entirely necessary to record the swishing of the exaggerated skirts and petticoats worn by Mae West; this sound frequently detracted from the action and dialog. Director Lowell Sherman, in his efforts to maintain the requisite speedy tempo, also fell into the inexcusable error of overdoing the moving-camera technique, especially with trucking and panning shots across virtually vacant sets. One individual scene, however, made from behind a performer on the stage of the beer garden, is deserving of an award for its excellence. It has a quality definitely suggestive of a fine etching.

"NO MAN OF HER OWN"

photographed by **Leo Tover**

This production offers good, routine cinematography, which, if not up to the best that Leo Tover is capable of, is none the less workmanlike. Tover was obviously working under a number of disadvantages, however, not the least of which were some of the most atrociously painted sets which this reviewer has seen in a long time. Time and again the violent and purposeless contrasts in the background attract the audience's attention from the action to the setting, and this despite Tover's obvious efforts to remedy this fault of the usually impeccable Paramount Art Department. He is deserving of better opportunities.

Scheiner	Eder-Hecht	H & D	Watkins	Wynne	Relative
1	42	7	11	F/21	1
2	46	9	13	F/24	1.27
3	48	12	17	F/28	1.62
4	50	15	22	F/30	2.07
5	53	19	28	F/34	2.64
6	56	24	36	F/38	3.36
7	58	31	45	F/43	4.28
8	61	40	58	F/49	5.45
9	64	50	74	F/55	6.95
10	66	64	94	F/63	8.86
11	68	82	122	F/71	11.3
12	71	104	153	F/79	14.4
13	74	133	196	F/90	18.3
14	77	170	250	F/101	23.4
15	80	216	317	F/114	29.8
16	82	276	405	F/129	37.9
17	84	351	515	F/145	48.3
18	86	448	660	F/165	61.6
19	88	570	840	F/196	78.5
20	90	727	1065	F/209	100.0

Speed and Fog

by
Emery Huse, A.S.C.

Part 23 . . . of "Principles of Sensitometry and their Practical Application"

IN pure sensitometry the sensitometric constant, speed, occupies a relatively important position In actual practice, however, this constant, although indicative of an emulsion's sensitivity, does not assume an important position However, some attention should be given to this constant and some mention should be made of systems other than the Hurter and Driffield for the determination of speed Speed is nothing more than an expression of the reaction of a photographic emulsion to light and in the Hurter and Driffield system the higher the number the greater the reaction, or the greater the speed.

One of the earliest methods used for expressing speed was to specify the amount of exposure required to produce a just perceptible density However, there is more to be considered in the sensitivity of an emulsion than that exposure which will produce a just perceptible density As has been fully explained in previous articles in this series, the Hurter and Driffield method of sensitometry calls for a series of exposures varying in a fixed ratio and which when developed and read for density can be plotted against the logarithm of exposure into a definite curve which shows the reaction of the emulsion to various quantities of light It was Hurter and Driffield who first suggested that the speed of an emulsion could be specified in terms of the 'inertia' They defined inertia as the exposure value at the point where the straight line portion of the H and D curve cuts the log E axis They also proposed the formula for the determination of speed as the reciprocal of the inertia multiplied by a constant The value of the constant which they chose was 34. Speed, therefore, by the Hurter and Driffield system is defined as

$$S = \frac{1}{I} \times K$$

The use of this number gave a series of speed values for commercial emulsions of convenient magnitude for practical use With more refined methods of sensitometry, as in use today, the Hurter and Driffield formula remains basically the same, although the value of the constant K is different, depending upon the exact type of sensitometer used and its physical setup

There are other methods of expressing speeds The Watkins factor, which is more generally known in England than in this country, is also based on inertia but makes use of 68 as their constant Another method of speed notation is the Wynne system This is not used to any great extent but is interesting in that it is based fundamentally upon inertia values but uses numbers which are expressed in terms of lens aperture as indicated by the symbol F which precedes the number These numbers are proportional to the product of 6 40 by the square root of the Watkins number As an example, a Watkins speed of 100 gives a Wynne factor of F/64

The Scheiner system used a sensitometer of the sector wheel type so cut that exposure increases logarithmically from 1 to 100 units The distance between the points on the photographic material corresponding to these exposure limits was divided into 20 equal steps numbered consecutively from 1 to 20 The Scheiner speed scale, therefore, consists of numbers in arithmetical progression from 1 to 20, which covers a sensitivity range of from 1 to 100

The Eder-Hecht sensitometer consists of a neutral gray wedge with a continuous gradient which is used as a tablet On this are printed a series of numbers in arithmetical progression and equally spaced The speed scale is, therefore, also of the logarithmic form, assuming that the neutral gray wedge has a constant gradient

In the accompanying table the speed ratings as derived by the various methods are given for intercomparison

It must be borne in mind in considering these speed determinations that any individual speed value of an emulsion depends, of course, upon the amount and type of exposure given and upon the degree of development and the chemical setup of the developer For a non-bromided developer H and D speed is a constant for various times of development but for developers which contain free bromide the H and D speed varies with the gamma, which in turn varies with the time of development It is very difficult to separate and distinctly isolate any individual sensitometric constant Gamma, speed and latitude are all definitely definable sensitometric constants but they are all subject to change with a given emulsion under a given exposure condition if the development is altered in any way It must, therefore, be remembered that the definitions and interpretations which have been given on these sensitometric constants apply to a single arbitrarily chosen H and D curve The same rules which apply to one curve can be used for the determination of any constant for any other curve It is possible, therefore, to make an exposure on positive film and develop it in a regular positive developer and make a determination of speed, gamma, latitude, etc It is also possible to determine these same constants on negative film as developed in a negative formula

FOG

In the process of developing a photographic emulsion a condition arises which, from the standpoint of pure sensitometry, it becomes necessary to recognize Reference

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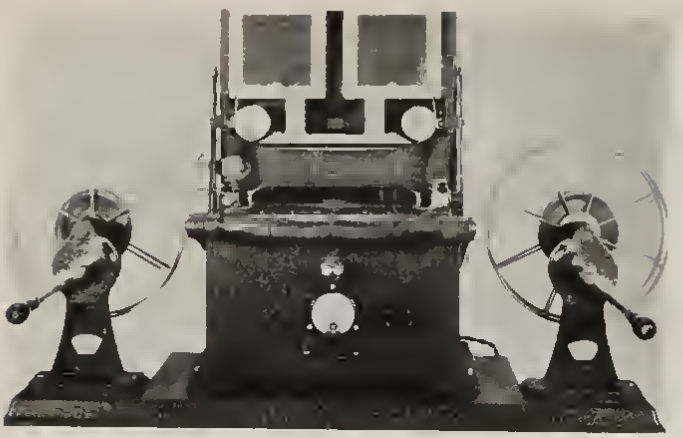


At right, complete testing strip as made on machine at left

Lite-Testing Machine Reduces Printing Costs

INTEREST is being evinced in Hollywood in the recent development by Art Reeves of his new Lite-testing Machine

In some laboratories it has been the custom to judge or guess the printing light of the negative This is at best a hazardous method and does not assure evenness throughout the reel In many instances the color variation of the negative has been known to throw the timing off, demanding reprints of scenes not correctly timed which have proved costly in both time consumed and materials wasted

According to the claims of Reeves, this light testing machine is always ready for work as it is equipped with film magazines Raw stock of the same emulsion to be used in printing is placed in the magazine on the left of the tester and then threaded over the roller and printing pad under the sprocket and into the take-up magazine The purpose of the magazine is to keep the unexposed film from the red light which has a tendency with an over-exposure time to fog the film

The negative is placed on the re-wind at the left and passed through the guide rollers over the printing glass through another set of guide rollers onto the take-up reel The relation of the re-winds and the printing glass are so placed that the possibility of scratching is said to be avoided

The main switch controls the lighting system of the machine There is a red light over the meter and also in the machine The red light in the machine allows the operator to see the portion of the negative he is about to test at all times There is a control knob along side the volt meter which adjusts the voltage for the proper amount of current for testing

When ready for testing the negative is rolled into place The head of the machine is pulled downward bringing the magazine and raw stock in to contact with the negative. The exposure is automatically timed and the handle is then raised into the starting position When the magazines are moved back to the starting position, the light test that has just been made automatically winds up in the take up magazine During the exposure eleven frames are exposed, each frame receiving a different light density with an identifying number printed upon it that corresponds with the printing machine Alternate numbers from one to twenty-one are used which permits of an even number reading should those exposed not hit the identical exposure desired

When all of the scenes on the negative reel are tested, they are developed to a given time After being dried they are laid side by side over a timing box which consists of a ground glass with a light behind it Here the tests are read for the correct time, and the photographic balance can be studied as the tests lie before the person to do the timing

The machine will print the edge number of the scenes tested which permits the quick identification of scenes practically identical but made under different conditions

The machine claims a very unique rewind with balanced handles The position of the rewind will be noted in the illustration

WHEELS OF INDUSTRY

New 16 MM Reversible Film

● THE Rod-Al Film Laboratories have culminated their two years of experimenting according to a recent announcement from that firm in their new Rod-Al Reversible 16 mm film which they have placed on the market

It is the claim of this laboratory that their Rod-Al film is of very fine grain, and has sufficient speed and latitude for all outdoor work While it is somewhat slower in speed than Panchromatic it has been their experience that for all outdoor scenes it is highly satisfactory

The Rod-Al Laboratory has established a one day service for all western states

8 MM. Tripod Head

● A TRIPOD head has been devised by Fred Hoefner, according to a recent announcement from him, for an 8 mm camera This has been very simply designed and will fit any standard still tripod While it is of lighter design than the 16 mm , still it is one that those looking for something economical could use on the smaller 16 mm cameras It is understood this little tripod head weighs 6 ounces and will market for less than $4 00 It has both tilting and "panning" locks

Earthquake Picture

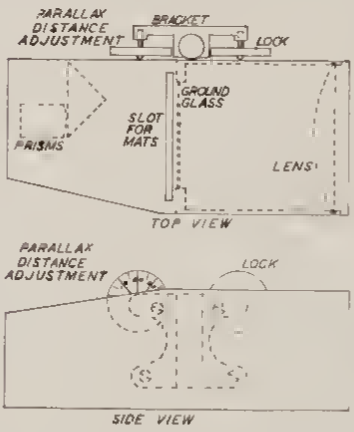
● A TWO HUNDRED foot picture has been completed of the Southern California Earthquake by the Rod-Al Film Laboratories This subject is said to contain the highlights of this catastrophy which startled the entire world only a few weeks ago

Among the scenes are shown the havoc wrought not only to residences, but also larger buildings which with comparison to those structures standing is evidence that the quake did its greatest damage in poorly constructed buildings There are said to be intimate scenes of survivors camping out and other make-shift methods of living and carrying on business which shows the ingenuity of the American when necessity demands

16 MM. Professional Finder

● A MINIATURE professional finder for 16 mm use is announced by Harrison & Harrison of Hollywood It is their claim the finder will give the 16 mm field all the advantages of the professional in the use of camera finders

A prism optical system as shown in figure creates a large upright image on a ground glass which enables the photographer to view the image with both eyes instead of the conventional peep hole method



The bracket is fastened permanently on the side of the camera which makes the finder easily demountable The calibrated footage screw adjusts the finder for paralap while the back screw insures rigidity after the footage screw is set

The finder without masks gives an angle equal to a 20 mm lens on 16 mm film and is also provided with a slot in the top which allows the use of matts

The Cama-Cane "Tripod"

● VICTOR Animatograph Corporation, Davenport, Iowa, is introducing the Cama-Cane, which is nothing other than a telescoping walking stick which serves as a tripod

The handle of the Cama-Cane is equipped with a removable head screw which fits into the tripod socket of any 16 mm movie camera The head-screw locks securely into place on the handle but is fitted with a slotted ring which permits the camera to be turned at any angle desired in relation to the cane handle

When the Cama-cane is not being used as a "tripod" the camera attachment on the handle may be completely removed so the cane may be carried as a walking stick without discomfort to the hand

The shaft of the Cama-Cane is hollow and contains a telescoping section, which, when extended to its full length, gives the Cama-Cane an over-all length of about five feet.

Astro Fast Lenses

● THE Mitchell Camera Company has announced the addition of two new lenses to their line of Astro products These are the 52 mm. f 0 95 and 75 mm f 0 95. They also mention in their announcement their f 0 95 35 mm lens which is suitable for the following 16 mm cameras, DeVry, Filmo, and Victor

New Film Editor, Distributed by Victor

● VICTOR Animatograph Corporation, Davenport, Iowa, announces that it is now distributing a new type of editing device, known as the 'Eye-Easy Editor", which projects a large "still" of the frame being inspected and thereby relieves eye-strain and speeds up editing

The eye-easy editor is equipped with a special prism and projecting head which permits the picture to be projected any convenient distance and viewed right side up It is also equipped with a rewind which may be used with or independent of the projector head and the

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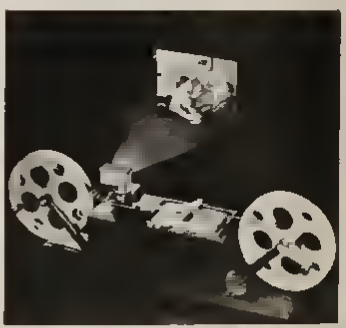
New Victor Film Editor



Georges Benoit, A.S.C. Active In France

● Georges Benoit, A S C, the official representative of the AMERICAN CINEMATOGRAPHER in France, has given an interesting report of Cinematographic conditions in the French cinema industry in his most recent communication to the American Society of Cinematographers He writes· I have just finished a picture with Maurice Torneur, called "Les Deux Orphelines" ("The Two Orphans") It is the same story that D W Griffith produced a few years ago with the Gish sisters, under the title "Orphans of the Storm" It is quite a big production, taking three months of shooting time While photographing it, I had the good fortune to be the first Cinematographer to use the first models of the two new types of Silent Cameras made here in France—the De Brie "Super-Parvo" and the new "Camereclair, modele 1932" The new De Brie is a very good outfit—a tremendous improvement over anything made heretofore, and, of course, much better than anything that had to be used in a blimp The new Eclair Camera ("Camereclair Modele 1932") is my pet camera It requires no blimp at all, for it is absolutely noiseless Moreover, it has every imaginable improvement, and is still of very small size Working with it is, in fact, no different from making silent pictures with the old-time cameras we used to have before the talkies came.

Right now, production is very quiet in all of the French studios on account of the economic and political crises through which we are all passing Even the French Paramount Studios at Joinville have been closed for the past two months

I always enjoy seeing the big productions that come from Hollywood Lately such pictures as "Shanghai Express," "Dr Jekyll and Mr Hyde," 'Scarface," "I Am A Fugitive" and many others have been shown in Paris I enjoy the pictures—especially their masterful technique Really, you don't know how lucky you boys in Hollywood are to have such perfect facilities at your disposal Here in France we work under tremendous limitations of every sort We simply can't make those wonderful travelling shots that you do, we haven't got the equipment that makes it possible Consider, too, that our biggest productions cost only two million francs —that means $80,000 or less—with the average picture limited to much less than this, even Our shooting schedules are painfully short, too, then after all of this grief there is still the laboratory problem—but the less we say about European laboratories the better. It's too sore a point with all of us!

On the other hand, we do have Super-Sensitive Panchromatic film, which helps a lot, and pretty good incandescent lighting equipment Over in Germany, on the contrary, they use only the yellow carbon arcs And at last we have here in Paris two studios equipped with the 'Transparency Projection Process," which (as you know) gives wonderful results It is a great help to us

We are organizing a Society, patterned somewhat after the A S C, called the Syndicat des Cinegraphistes Francaises It is progressing very well, and we have about 80 members—that is, almost all of the Cinematographers in Paris The main object of our Society (aside from the social and technical phases, which are like those of the A S C.) is to enable us to maintain a fair rate of salaries, to establish normal working hours and to protect our interests against the importation of foreign cinematographers This last, of course, is something you in Hollywood never have to worry about—but it's different here, from Paris to London or Berlin is only a matter of a few hours travel, and we French cinematographers are not permitted to work in those countries All that we desire is reciprocity on this score, which is only natural

Recently I saw Mr Shaw, who is the Director of the French Magazine "Cine Amateur" He was very glad to see the importance that the AMERICAN CINEMATOGRAPHER is giving to its Amateur Department, and the evidences of cooperation between professional and amateur in America

John Dored, A S C. to France

● John Dored, A S C., Paramount Newsreel "ace" in Europe, has been transferred from his former headquarters in Riga, Latvia, to Paris According to word received from Dored, he has stopped off en route in Berlin to "cover' the German political crisis

Glen MacWilliams, A.S.C., Promoted

● London—Glen MacWilliams, A S C, has been made Chief Cameraman of the Gaumont-British Studio

Philip Chancellor, A S C., Wed In London

● Announcement has been received that Philip M Chancellor, A S C, F R G S, and Miss Elza Tennair, of Vienna and Berlin, were married March fourth, in St George's Chapel, London Mr Chancellor, who will be remembered as the leader of the several Chancellor-Stuart-Field-Museum expeditions, has been for some time in Europe supervising the development and construction of special cinematographic equipment being built to his specification by the Zeiss works of Jena The future plans of the couple are not known

Edwin Dyer, A S C, Joins Jam Handy Pictures

● Edwin L Dyer, A S.C., is now associated with Jam Handy Pictures, Inc, of Detroit, Michigan He was formerly Chief Cinematographer for the M P A Studios, of New Orleans According to reports received from Mr Oyer, Jam Handy Pictures is one of the most completely equipped industrial film producers in the country, using Western Electric sound and having several complete crews in charge of four First Cinematographers

New Paramount Contract For Milner

● Victor Milner, A S C, has signed a new long-term contract with the Paramount studios, where he has been for the past twelve years He will continue as Chief Cinematographer on the productions of such directors as Ernst Lubitsch, Rouben Mamoulian, and others

Ernest Palmer, A.S.C, to Photograph "Berkeley Square"

● According to announcements made by Jesse Lasky Productions, Ernest Palmer, A S C, whose camerawork on "Cavalcade" has attracted world-wide notice, will be in charge of the photography of Lasky's forthcoming production 'Berkeley Square," which is to go into production in April under the direction of Frank Lloyd, director of "Cavalcade" and starring Leslie Howard Art Director William Darling, responsible for the "Cavalcade" sets, will complete the triumvirate assigned to the new production in recognition of their successful cooperation in making the Noel Coward epic

Jimmie Howe Returns To Photograph "Power and Glory"

● James Wong Howe, ace cameraman, has returned from Europe where he shot 50,000 feet of background and stock shots for Fox He will start immediately as Chief Cinematographer on the Jesse Lasky production, "Power and Glory" to be made under the direction of William K Howard

Report of Testing Committee on "Arri Model E," 16mm. Printer

WHEREAS the firm of Arnold & Richter, of Munich, Germany, have, through their Hollywood representative, Mr Fritz Reichel, submitted their step-printer for 16 mm film, known as the 'Arri, Model E' printer, to the Testing Committee of the American Society of Cinematographers, and have duly accompanied it with a list of the aforesaid manufacturer's claims and specifications, and

WHEREAS the Testing Committee of the American Society of Cinematographers has duly tested the said product in accordance with these specifications and in accordance with their own practical tests, and

WHEREAS the said Testing Committee has found the said "Arri Printer, Model E" to be excellent in design and workmanship, and satisfactory in performance,

THEREFORE does the Testing Committee of the American Society of Cinematographers certify that the said "Arri Printer, Model E" is worthy of the Approval of the American Society of Cinematographers, and does hereby authorize the Secretary of the said Society to bestow upon the said "Arri Printer, Model E" the mark of the Society's approval, which Stamp of Approval the Committee does authorize the said firm of Arnold & Richter and their said agent, Fritz Reichel, to imprint upon their product, the said "Arri Printer, Model E," and to use in their advertising of that product so long as the design and manufacture of that product does remain unchanged.

The Committee finds the manufacturer's claims for fine workmanship, perfect contact of the films, and steadiness to be amply justified. The capacity of the machine is 400 feet each of negative film and raw positive, and at its maximum speed it will print 400 feet an hour. The Committee does especially commend the design and operation of the clutch and brake mechanism for instantly stopping the claw movement without stopping the motor, the accurate control of the printing-speed, and the method of light-control by means of a square iris, which permits not only a wide range of light-changes without the use of a rheostat and its inevitable change of the color-temperature and actinic value of the printing-light, but also permits the making of excellent fade-outs with this printer. The provision for framing the printing-aperture in order to compensate for variations in the frame-line on negatives made with different cameras is also commendable, as is the ruby-glass pressure-plate and the red light-window inserted in the disc of the shutter to facilitate threading the projector.

Report of Testing Committee on Hoefner "Trueball Tripod Head, Model A," for 16mm.

WHEREAS Fred Hoefner, of Hollywood, manufacturer of special motion picture equipment, has submitted to the Testing Committee of the American Society of Cinematographers his friction-type pan and-tilt tripod head for 16 mm cinematography, known as the "Trueball Tripod Head, Model A,' and submitted with it a list of the said product's specifications and his claims therefore, and

WHEREAS the Testing Committee of the American Society of Cinematographers has duly tested the said product in accordance with these claims and with the Committee's practical requirements, and

WHEREAS the said Testing Committee has found the said "Trueball Tripod Head, Model A" to be satisfactory in respect to these aforesaid requirements, in actual performance, and of excellent design and construction,

THEREFORE does the Testing Committee of the American Society of Cinematographers certify that the said 'Trueball Tripod Head, Model A" is worthy of the Approval of the American Society of Cinematographers, and does hereby authorize the Secretary of the said Society to bestow upon the said "Trueball Tripod Head, Model A" the mark of the Society's approval, which Stamp of Approval the Committee does authorize the aforesaid Fred Hoefner to imprint upon the said product, the "Trueball Tripod Head, Model A," and to use in advertising that product so long as the design and manufacture of that product does remain unchanged.

The Committee finds that the manufacturer's claim that this tripod head is unique in design is well justified, as it is based on the principle of the ball-bearing, utilizing a true and well-made ball equipped with a socket which is attached to the head of any standard tripod made for medium-sized still cameras. the base-plate onto which the Cine-camera is fitted forms a part of a circular socket which is fitted around this ball, and which is thereby enabled to be moved in any plane about this ball-joint. This movement is controlled by a single handle which serves to move the camera through its vertical and horizontal arcs, and also enables the operater to lock the tripod-head in any position. A simple leather friction-pad easily adjusted, enables the operator to adjust the tension governing these movements to any degree that may be required. The Committee commends the simplicity of this device, and its sturdy construction, which is such as to permit long use without any need of expert attention or servicing beyond an occasional oiling. The Committee also commends the ingenuity of the design which makes excellent, smooth movement assured.

AMATEUR SECTION

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- HERE'S HOW A department no amateur can afford to overlook Many pertinent questions are answered each month by members of the American Society of Cinematographers

The number of objects in your picture gives you the visual conception of speed Panning on a picket fence even slowly would make the viewer dizzy.

Fast Panning Isn't Your Fault

by

Hartley Harrison,
Optical Engineer

EVERYONE starting in to take motion pictures can not make the same apparent mistake without there being a reason

The amateur has been panned for panning too fast ever since the 16 mm camera has been placed in his hands Just why it should always be too fast puzzles many of them The finder indicated an ultra-slow speed, but still it flits by on the screen in a most aggravating manner When he looks into the finder and sees the objects move by at a speed which to him is the speed he wants and then finds that on the screen it is entirely different, he starts to figure that there is a catch somewhere. Of one thing that is certain, there must be a difference in the speed relation of the finder image to the speed of the image on the film (for convenience we will use the expression speed of image for speed of changing of scene)

On looking over the amateur cameras we find that in practically all of them, the finders consist of a minus lens and a peek hole or a peek hole and a frame, the frame of the lens or the bare frame acting as the border of the picture

Therefore, let's first compare the minus lens of the finder to the plus photographic lens of the camera which actually forms the photographic image

If we move a minus lens while looking through it, we will see that the objects move with the movement of the lens or in the same direction as the direction the lens is moved But on the other hand if we hold a weak positive or plus lens up to the eye and move it, we find the objects move in the opposite direction to the direction we are moving the lens

Upon experimenting further we find that the stronger the minus lens is the more "with" movement there is when we move the lens, and also the reverse for the plus lens, the stronger it is, the greater the opposite movement

Now let us see how this applies to panning a motion picture camera In looking through the minus lens finder and panning the camera at a certain speed a stationary object in the center of the field is apparently moving at a reduced speed relative to the actual speed of panning as the object moved with the lens But the photographic objective creating an opposite movement is actually moving the object at a relatively greater speed than the actual speed at which the camera is being passed, resulting in a wide difference between the apparent movement in the finder, the actual movement of the camera, and the resultant movement of the image on the film

However, we find that regardless of how strong the curve is of the minus lens the edge of the lens moves into the scene faster than the with movement of the lens which is, of course, the salvation of the minus lens finder Upon moving the frame alone we find that it cuts into the picture at a greater speed than with the minus lens, as we now do not have the with movement created by the lens, and we are amused at finding that a frame without a minus lens is better than a frame with one, insofar as an aid in judging the speed at which we should pan, relative to the camera lens

But neither type of finder gives us a similar reproduction of the condition created by the photographic lens, although the professional finders on professional cameras do, in that they use a plus lens and form an image on a ground glass duplicating the condition of a photographic lens forming an image on the film

Assuming that the art of panning is still in the trial and error stage of seeing the scene on the screen when it is too late, let us see if we can't formulate some sort of rule to guide us by in determining how fast a pan shot can be made and still be pleasing to the eye on the screen, and to do this it is necessary to understand the normal function of the eyes in looking from one object to another

The eye does not glide like a pan shot from one point of fixation to another, but jumps, fixes upon an object, jumps, fixes upon another object and so on, never fixing upon one object any length of time and suppressing all vision between jumps

This normal function gives us a good basis to work from where we are panning scenes without fast action, (of course in scenes with fast action the eye fixes upon the moving object and follows it suppressing everything else) But taking a scene which is more or less still, suppose we fix our eye on an object in the center of the scene before panning and then count or time while fixing the eyes upon and seeing in a normal manner every individually different point or object between the first point and the object you intend to pan to, the length of time it takes to do this is the lenth of time it should take to make the pan shot, because on projection the observer will try to

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Experimenting with the Infra-Red

by

W. J. Summers

Left: Day hazy, time 11 A.M. No filter. Right: Infra-red Plate used and 89A Filter. Exposure 1/5 sec. F.11. Day hazy time 11 A.M.

WE—and I am talking about us ordinary people—pick up a magazine or read an article in the newspaper dealing in such things as radio-waves, ohms, wave-lengths, x-rays, or anything of that sort, usually say that's fine, and that's as far as we go. It generally scares us so badly that we wouldn't think of even trying to find out what it's all about.

When I read in the different magazines of the various experiments with infra-red rays, I determined that I would make an endeavor to make a few pictures using infra-red plates and find out what it was all about. So gathering information here and there, and believe me it's hard to get, and purchasing some infra-red plates, for which the local dealer had to send away, I made several exposures, and to my great amazement some of them turned out really well.

There is nothing very mysterious about infra-red rays, except that we all know that it is a ray that is invisible to the eye. Therefore, when we are able to make a picture using infra-red rays only, the scenery takes on fantastic and weird aspects. Landscape photographs taken by infra-red light appear quite fantastic and are very characteristic. Green foliage is a very strong reflector of the infra-red ray and, therefore, leaves of trees appear as if they were white. Shadows are very deep and show total lack of detail, while the blue sky appears black since there is practically no red light in it.

The best plate recommended for landscape photography to penetrate haze and show up objects distinctly at a great distance is the Eastman Red-sensitive Type 3-R. On a normal day, using a Wratten 89A Filter, one second at f 8 is the correct exposure.

If you desire to use infra-red light and make pictures indoors in complete darkness, the Eastman Mesocyanine type 3-P plate should be employed, and the subject irradiated with the radiation from tungsten lamps with Wratten 87 Filters.

For those who wish simply to get a record by invisible infra-red light with the subject not actually in total darkness, a Wratten 87 Filter should be used on the camera lens. The plates should preferably be hyper-sensitized with ammonia 4% at 50° F. and dried rapidly before taking the picture. With the Wratten 87 Filter a suitable exposure will be about ½ second at f-8 for pictures outdoors in full sunlight. Exposures at other stops and other levels of illuminations can be calculated from this. If the plates are not hyper-sensitized, good negatives will be obtained in about five seconds exposure.

For those who desire to take pictures in total darkness, the room must be illuminated by about one kilo-watt of tungsten illumination per 100 square feet of floor space, the lamps preferably being arranged so that the filament cannot be seen, and the light directed towards the ceiling, the rays reflected from the ceiling being utilized for the purpose. Over the lamps must be placed a special dark-red filter, Wratten 87, which can be obtained coated upon glass in the shape corresponding to safelights. The exposure under these conditions will be about one second at f 3.5. The same effect, of course, can be obtained by placing a No. 87 filter over the lens and eliminating those over the lights.

In general, it can be taken that in photography with hyper-sensitized Mesocyanine Type 3-P plates and in using a Wratten 87 Filter the exposures outdoors in sunlight are about fifty times those which would ordinarily be given with Kodak N.C. Film. The exposures indoors in tungsten light are about eight times those which should be given with NC Film.

All infra-red plates may be used non-hypersensitized, but it is very easy to hyper-sensitize these plates, using about one part of ammonia to twenty-five parts water. Of course, this must be done in a totally dark room. Immerse the plates in this solution for about 45 seconds, after which they should be taken out and dried as rapidly as possible. Care should be taken that nothing should come in contact with the emulsion. These plates do not have to be hyper-sensitized, and the ratio of exposure on a plate not hyper-sensitized to one hyper-sensitized is approximately two to one. Therefore, if the object is apt to move, or fast exposure is required, it will be better to hyper-sensitize the plates.

Any developer may be used in developing these plates, but Eastman X-ray Developer, or any contrasty developer, is recommended to get extreme contrast.

It is possible to use Wratten Series III Safelight with Eastman Extreme Red Sensitive Type 3-R and the Mesocyanine Type 3-R plates which are sensitive beyond the absorption region of the Safelight, and these plates should be developed in total darkness.

It is even possible to make flashlights using infra-red plates type 3-P, by using six or eight photoflash lamps and reflectors effectively screened with Wratten 87 Filters using f 4.5 stop. The filters may be placed over the lens instead of over the lamps if so desired.

In portraits by infra-red rays the flesh appears chalky, the red lips come out very light and are indistinguishable from the flesh, eyes appear as small black circles, while all the lines of the face are enormously exaggerated.

I would recommend that anyone who wishes to experiment with infra-red photography read the 1933 copy of the British Journal. There is a very fine article in there on this subject with a wealth of information.

"Reflectors . . .

MANY 16 mm photographers who have attempted close-ups in bright sunlight have been disappointed with the results on the screen because they were not as pleasing or flattering to the subject as they should have been The picture was too "contrasty, that is, the highlights were too bright and the shadows too dense to pass as a true reproduction of the scene taken This is due to the fact that the film does not have the same power to accommodate and record the wide extremes of contrast as does the human eye To compensate for this unfaithful rendering of light-values, these extremes must be reduced to obtain a more natural result, and this is done by reflecting light into the shadows, and, in some cases, diffusing the strong source of light Almost any white surface, such as bed-sheets, can be used as makeshift "reflectors," but many have written to the Editor asking how to make regular ones to add to their equipment I shall attempt to describe the making of a reflector that I believe will be found generally useful, considering variety and ease of handling I think that a reflector three by four feet in size would be the best for the amature, and these can be made to fold up like a book, to reduce size when not in use, and this further protects the reflecting surface Two frames are made of 1 x 3" dressed pine, or similar lumber, four feet long by one-half foot wide These are hinged together on the long side and one side is covered with a sheet of veneer or fibre board This surface is now varnished and before dry is dusted with aluminum powder, then allowed to dry and the excess shaken off The reverse surface may be covered with silver leaf which makes a very bright reflector for use when the light is weak, or when strong light is to be thrown long distances A second reflector may be covered with 'gold" metallic powder which makes a very fine reflector when used with panchromatic film This latter renders blue eyes and skin textures beautifully without the necessity of make up Paint the reverse side with flat white paint which reflects a weaker but softer light than the aluminum powder Thus with two "reflectors" covered on both sides as I have suggested, four types of surfaces are available which will be ample for the usual conditions of light met with The reader must realize that no one kind of reflector of best for every condition, for as the light changes in value so must a reflecting surface be adapted to suit it As a rule the brighter the daylight, the brighter the reflector that must be used to fill in the deep shadows In soft diffused light such as occurs on hazy days no reflector is needed because the haze reduces the contrasts, and the light is coming from all over the sky to illuminate the shadows To get the right balance of reflected light, the reflectors are moved closer to or set back further from the subject until the correct balance is struck The reflectors described so far are for use in lighting close-ups, and their use will improve your photography if correctly used Some may wish to go one step further and make some reflectors that are useful for the longer shots, for lighting effects, for throwing light under trees and into interiors For these latter uses, sheets of tinned metal are attached to a frame support which makes a reflector of mirror like brightness Hammer the sheets here and there to break up the light into variegated pattern Many beautiful background effects can be obtained by raking the side of a building with light or projecting it through the branches of trees to produce artistic shadows of light and shade Obviously this type of reflector is too brilliant and harsh to be used in portraiture

One of the greatest aids to good close-up exterior photography is the use of diffusers" These are placed between the subject and the bright sun to soften the light The contrast is thus reduced and a softer reflector may be used, or in many cases none used at all This is often desirable because many persons cannot retain natural expressions or keep their eyes open under the glare of bright sun and hard reflectors These 'diffusers" are simply metal hoops of white cloth the cloth generally being Chinese silk or double thickness of cheese-cloth The hoops are from four to six feet in diameter, and may be made collapsible

The use of reflectors in the hands of the inexperienced can be, and often is, abused The most judicious placement of the reflector and its intensity must be correctly controlled, or the result on the screen will be more unnatural than if the scene had been taken without them In the case of portraiture, the idea is not to equally balance the shadow side of the face with the highlight side, but to prevent the shadow side from recording unnaturally too dark This discussion borders on the phase of lighting and no definite rules can be given—that being up to the artistic ability of the camera man and his judgment in using the proper ratios of contrasts on each individual subject before his camera As a rule women are photographed more beautifully when the sources of light are soft and diffused, and the contrast between highlight and shadow is not too great Men require a more bolder—or contrastier—lighting The extreme is reached when the contrasts are so great and the sources of light are from such unnatural positions as to produce the mental effect of unrest

Place this in a stereoscope Your reflector used for "live lighting' The trees behind the actors in line with the camera were cross lighted with bright reflectors so they would photograph light.

How to Make and Use Them"

by

Chas. G. Clarke, A.S.C.*

and unreality Such lighting effects often enhance certain moods of mystery and intrigue and by some are known as "dramatic" lighting To my mind drama covers all moods and the skillful photographer will light his subject according to the thought of the scene depicted Light, cheerful scenes require bright, brilliant photography, and sinister, mysterious moods are best conveyed by erotic lighting While some people have more artistic ability than others, still in the case of lighting, the science is built upon common sense rules When we analyze light as it occurs in nature, we find that the general condition is a bright sun above, which is the source emitting the rays which pass through various diffusing mediums, such as haze and clouds, until they strike the object Other rays are reflected back to the object from the ground and objects all around, and from the sky above, and they illuminate the shadows If there was not this reflected light, the shadows would be absolutely black The ratio, or "balance," between the direct light and reflected light varies constantly in nature Inasmuch as the light source in nature is generally above us, we have adapted ourselves to this source of light and any other is unnatural We are accustomed to see the shadows fall below the objects that obscure the light from above Therefore when we want to light a subject by artificial means so that the lighting imitates natural lightings, the artificial source is placed somewhat above the person or object to be photographed When the source of light comes from an uncustomary angle, such as from below the object, the shadows are cast upwards and an extremely unnatural effect is produced

These are the basic rules of lighting and I cannot attempt in this article to elaborate more Incidentally splendid explanations by qualified artists appear in the "Cinematographic Annuals" and should be read by everyone who wishes to improve his work I wanted to mention these few rules here to illustrate the importance of placing the reflectors in the correct positions in relation to the subject to be lighted One of the very few cases where strong light is reflected from below is when snow is on the ground We all are familiar with the unusual lighting—and hence expressions of the faces about us. In snow scenes, of course, that lighting is natural, but for lighting conditions most usually encountered, we don't want to make the mistake of reflecting the light from beneath the object Do not use the reflectors from the ground below the object! That is the general mistake, and I hope to have made it clear why it is wrong If the reflectors are used close to the actors, then the reflector should be never lower than the lens of the camera To raise the reflectors up to where they belong easels or some sort of adjustable support should be provided so that the reflector can be easily turned to various angles, for after all they are just another form of mirror or spot light Easels or collapsible tripods with pegs for the various lights are generally used for this purpose By adding this apparatus to your equipment, a great many new lighting possibilities will be opened up to you For example, the beautiful 'back light" conditions which are so much used by the studio men, can be used by the 16 millimeter enthusiast if a few simple precautions are taken This type of lighting is produced when the objects are between the camera and the sun Breaking the old rule of having the sun at the photographer's back, he directs his camera towards it, although, of course, not shooting into it The objects are thus outlined in a halo of strong light and stand out vividly against the backgrounds Thus an effect of relief or third dimension is produced and the hair is beautifully outlined with light To compensate for the strong contrasts, light is reflected in to better balance the ratio The lens must be shaded from the sun or otherwise the lens will flare and ruin the scene The 16 millimeter worker might try his next close-up by putting his reflector on a high easel and then shooting through the easel beneath the reflector, using the shade of the reflector to shade his lens Those shady dells under dense trees that look so beautiful to the eye, yet always turn out so flat and murky on the screen, can now be used when touched up with splashes of light Interior scenes can be made when the light can be reflected in If your reflector has to be in the shade to use it from its best angle, then reflect light on to it with a large mirror placed out in the sun There is no end of the combinations that can be used to the advantage of the photographer, and I hope this article has directed your interest to work out some of them for your entertainment and improvement of your work

* Mr Clarke is one of Hollywood's best known Cinematographers, and has been photographing feature productions for many years Among Mr Clarke's recent releases are 'Too Busy To Work'—Will Rogers Second Hand Wife, "Hot Pepper," and many others

Place this illustration in a stereoscope It shows how the "Diffuser" is used to tone down the sunlight and the reflecter is used to fill in the shadow side Both of these illustrations were made by Mr Clarke from actual studio production set-ups

Edit With Your Camera

says

Margaret Clancey,
Who Edited "Cavalcade"

FILM-EDITING can be the hardest job in the world—or the easiest. It all depends upon what you have to edit.

"Cavalcade," for instance, was a big picture. We made two versions (British and American) at once, yet I never had an easier assignment. There was a good story and a well-prepared script. Frank Lloyd directed it in his usual efficient manner. he knew what he wanted in every scene—and he got it. So, even though "Cavalcade" was the biggest and most pretentious production the Fox Studio had made in a good many months, it was one of the easiest cutting jobs I've ever tackled. Mr. Lloyd had practically cut it with the camera—my work was simplified to the point where it was hardly more than assembling the scenes in their proper order.

Frank Lloyd knew what he wanted in "Cavalcade." He got it. As a result, "Cavalcade" was incredibly easy to edit. The same formula can be adapted to the requirements of any amateur picture, whether it's a dramatic production, a travelog, or a simple family film. The whole secret of it lies in first, knowing what you want in the picture; second, preparing (before you start shooting) to get it completely; third, getting it—everything—the whole story—while you are actually shooting.

It's relatively easy to prepare a dramatic film. whether it is made by an individual, a group, or a regularly organized club, a dramatic film is invariably the result of a serious, premeditated effort to produce a real motion picture. But what about the scenic and the family film?

Is there any reason why they shouldn't be given a little thought beforehand? Perhaps—as in a scenic—you may not know exactly what you are going to encounter, but in most cases you can usually formulate a pretty good idea of what should be the highlights of any locality, and accordingly take steps to "cover" them all thoroughly.

The same system can—and should—be used in making family record-films. After all, such films aren't really accurate records of your folks unless they show them doing some definite, characteristic things. If they are just animated snapshots, they aren't interesting even to the maker, after the first two or three showings. But if a little thought is given to preparing a simple, characteristic little story for one's family to enact before the camera, not only will the picture be inherently interesting—as a picture—but it will be far easier to edit.

All that is necessary is to translate this idea into terms of motion pictures—either in advance as a scenario or with the camera direct—saying, "This can be told in a long-shot, that must be made clear with a close-up" and so on. If you do that, the picture will practically cut itself.

Last Christmas our most prized gift was a little roll of 16 mm. film that came to us from relatives in the East, showing my two little nieces celebrating their Christmas. It interested us, of course, because neither my mother nor I had ever seen the youngsters, but it interested our friends because it was an entertaining little picture.

But don't imagine that this took any great mastery of motion picture technique to make! It was simple and natural. the sort of a story that anybody could evolve from every-day happenings; that was fun to make. And I'm certain that it was easy to edit!

I suppose about this time the reader is wondering why in the world a film-editor should lay such stress on preparing a story—on the work of the writer and director—instead of the actual business of cutting or editing. When the preparatory work is properly done, and whoever is directing the picture puts the story onto celluloid properly, two-thirds of the work of editing is done before the film-editor even rolls up his sleeves. The rest is hardly more than merely assembling the scenes in their proper order, and eliminating what little "misses fire."

I don't think anyone can lay down any rigid rules for editing. I know, certainly, that I don't work from any set formula or regulations. Each picture and each sequence demands its own individual treatment. The length of the scenes varies according to the action and its mood and tempo. long scenes, with few cuts will give a slow tempo, while shorter scenes, with more frequent cuts will give a

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It's Easy to Make Fade-Outs!

by

William Stull, A.S.C.

VERY FEW amateurs realize it, but ever since the introduction of talking pictures, the professional cinematographer has been in exactly the same position as has his amateur brother—he can no longer make fade-outs in his camera, even though it is equipped with a complicated dissolving shutter Yet the number of fades and lap-dissolves in professional productions has increased, rather than decreased How, then, are all these fades made?

Really, it is very simple, if you can't make fades while you are actually photographing your picture, you must simply put them in afterward In the studios, there are two principal methods of doing this first by optical printing, which is rather too involved for amateur use, and second by chemical treatment of the film after it has been processed This latter method is easy enough for anyone—and gives results that are in every way equal to camera-fades, and also enables one to put fades exactly where they are wanted, and to make them as long or as short as is desired Even before the advent of sound barred the camera-made fade, chemical fades were extensively used professionally, I have used them myself on many occasions when it was suddenly desired to begin or end a sequence with a fade which had not been made—or even thought of—when the picture was actually in work So, when I recently wanted some fades for a 16 mm. picture I was making, I simply took the film to the AMERICAN CINEMATOGRAPHER'S Research Laboratory—and made my own fades The illustration shows one of them

Now, most professional chemical fades are made on the negative; but the average amateur uses reversal film quite as much as he does negative—and this, of course, requires just the opposite effect to that required by a negative fade Either, however, is easy to make, and requires no special equipment or technique All that is necessary is a good-sized pane of glass (either clear, ground or opal), a tray or sink, a jar or graduate to hold the chemical solution used, and a cotton swab by which the solution is applied to the film The work is done after the film has been processed, and may, of course, be done by daylight or any clear artificial light

Regardless of whether the fade is to be made on negative, positive or reversal film, the procedure is the same, although the chemical solution varies The pane of glass is set in the tray or sink so that it will form a steeply inclined support for the film, which is placed over it with a weighted clip at the bottom to hold it straight (The emulsion-side of the film is, of course, away from the glass.) The film is moistened with water, and then the solution is applied to it with the cotton swab, which is most conveniently held in a pair of large print-tongs The solution is applied with a downward stroking motion, the lower end of the film will be the completely "out" portion of the fade, so the strokes should gradually lighten toward the top, and most of the solution be applied to the lower end of the film. It is helpful—but by no means absolutely necessary—to place a light behind the pane of glass, so that you can see what results you are getting without having to move the film It is also very convenient to punch a small semi-circle out of the edge of the film to mark the beginning and end of the fade When the desired effect has been attained, simply hang the film up to dry—and you have your fade! In some cases, you will get a smoother fade if you pass the upper (or least-affected) end between two pieces of cotton moistened in water before you dry the film, it is not advisable as a rule to do this to all of the film, however, for if you do you will be likely to remove some of the solution from the "out" end of your fade, thereby destroying the effect you have striven for

Now, the solution to be used clearly depends upon the effect you are seeking, if you are working on negative film, you want the fade to graduate from a clear, unaffected picture to absolutely clear film; if you are working on positive film, or upon reversal film, you want the fade to graduate from unaffected film to complete blackness

Therefore, for making a fade on negative, you will use some type of reducing agent, which will destroy the silver image, and leave the "out" end of the fade absolutely clear For making a fade on either positive or reversal film, you will use some visually neutral-black dye

In an article in the CINEMATOGRAPHIC ANNUAL Volume II Drs Ives, Muehler and Crabtree of the Kodak Research Laboratories give the following formula for making positive fade-outs by the dye method

VISUALLY NEUTRAL DYE BATH

Acid Anthracene Brown B	8.7 grams
Toluidine Blue	8.7 grams
Naphthol Green	2.6 grams
Water to	1 Liter

The first of these dyes is a product of the Grasselli Chemical Co., and the latter two, produced by the Hoechst Farbwerke of Germany, are available through the General Dyestuffs Corp., 233 Fifth Avenue, New York, U.S.A.

In the event that these chemicals are not available locally, certain makeshifts are possible. I have found that the dye known as Platinum Black 4B (obtainable through most dye houses, or from the United Chemical Products Co., of Los Angeles) makes a very acceptable substitute when used in the following proportions

Platinum Black 4B	125 grains
Water to	64 ounces

The length of application ranges from five to ten minutes, according to the length of the fade and the density desired This solution gives a very satisfactory fade, though it results in some coloration, it ranges from a slightly greenish black at the light end of the

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There's Continuity . . Even in a Cat

by **Karl Hale**

MY WIFE insisted that a motion picture be taken of the cat . . and I hate the damn cat I have my wife partly educated that I will not take a picture unless we can put some idea back of it Just a cat sleeping in the corner or pursuing any other activity in a corner does not create a picture

With that handicap facing me, she still insisted that a picture be taken of the cat So bearing the sort of affection I do toward the damn cat, I conceived an idea

A cat and a dog are proverbial deadly enemies Our neighborhood is full of enemies, so my cast was practically complete

However, my wife must be in the picture, so I opened it with a close up of her hand petting the cat's head, then backed up and showed her talking to another woman, in that "we've got nothing to talk about, but let's talk anyway," style

But let's start out with the scene sequences as the picture looks after it was cut and finished, and then get into the sordid details later

Scene 1—(Closeup) Woman's hand petting cat

Scene 2—Quarter shot of two women talking at hedge . . one woman holding cat in arms and petting it

Scene 3—Shot of dog approaching lawn

Scene 4—Closeup of dog

Scene 5—Closeup of cat in woman's arms indicating restlessness

Scene 6—Quarter shot again, showing cat struggling and making jump to ground

Scene 7—Cat with hair raised, ears back in the proverbial cat and dog fight fashion

Scene 8—Flash back to women showing fright

Scene 9—Cat facing dog, not giving ground, dog in playful attitude

Scene 10—Closeup of cat as dog sees it shot down toward cat

Scene 11—Shot at dog and cat facing each other

Scene 12—Closeup of dog as cat sees it shooting up

Scene 13—Another flash at two women, one trying to rush to cat's rescue, other holding her back

Scene 14—Shot at dog and cat facing each other, cat in belligerant attitudes

Scene 15—Closeup of cat's head, ears back, spitting

Scene 16—Closeup of dog's head, friendly attitude, turning head side to side in attitude of curiosity

Scene 16—Shot of cat and dog . . cat scoots out of picture

Scene 17—Long shot of cat running backwards very rapidly

Scene 18—Shot of two women, one running out of scene for cat

Scene 19—Shot of cat running up tree very rapidly

Scene 20—Closeup of woman under tree trying to entice cat down

Scene 21—Closeup of cat up on limb

Scene 22—Long shot, both women under tree trying to coax cat out of branches

Scene 23—Quarter shot, showing dog leaving battle ground

Scene 24—Long shot dog slowly ambling off sits down

Scene 25—Closeup of dog sitting scratching ear, fade-out

Scene 26—Fade in to cats on fence shoe thrown at them, they disappear finish

That much for the continuity Here's how the picture was taken The first shot taken was of the cat defying the dog We had to get a dog and keep him about 15 feet from the cat At that distance the cat held his ground Camera was set and one half of the film masked off After getting enough of the cat in this attitude the camera was marked on the tripod at several points with chalk In other words a mark was put on the camera and tripod head so that it could be put back in the same position Then the camera was taken into a dark room, film rewound back to the first frame, which had been marked with a punch before shooting, by taking the lens out and piercing the film with a hole This same frame was placed in the aperture The camera was taken back, carefully placed on the tripod according to the markings and then that portion of the film which was exposed for the cat was masked Then the dog was brought up to where he would be facing the cat at a reasonably close distance and shot for the footage in which the cat appeared

Then we had to go all over this again and get the cat back, get the dog at the proper distance for the close-up of the cat The closeups of the dog's were reasonably easy as he was a friendly old fellow

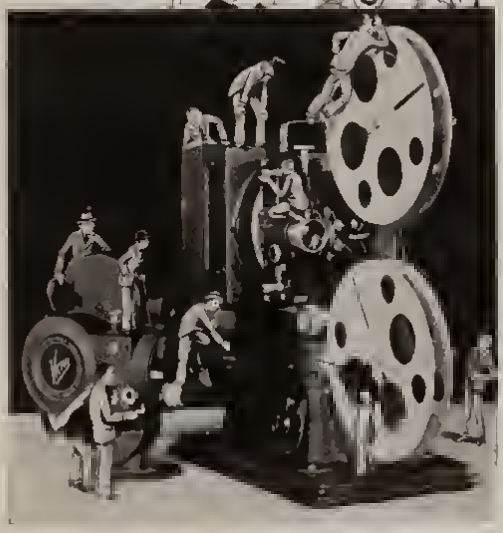
Of course making the cat run backwards was the old trick of holding the camera upside down Making him run mighty fast was accomplished by shooting at eight pictures a second

The final scene of cats on fence were done with silhouette cut outs and a heavy red filter for night effect

A premiere of the cat production is scheduled by my wife she plans a gala affair with all friends and the cat

Continued on Page 32

Movie Makers are weighing VALUES!



IT IS BECAUSE movie makers are *so earnestly* getting down to fundamentals that VICTOR'S reputation for giving the exceptional in values is growing by "leaps and bounds"

VICTOR'S pioneering of the nontheatrical movie equipment industry started a quarter century ago The most outstanding of 16 m/m camera improvements, such as Multiple Operating Speeds, Revolving Turret Front, Visual Focusing, etc , originated with VICTOR

VICTOR has also led the way with 16 m/m Projector refinements Maximum Simplicity, Brilliant Illumination, Guaranteed Performance, and such ingenious features as Postitive 4-Point Film Protection and the Adjustable Shuttle which insures Permanent Freedom from the development of "jumpy" pictures are only a few of the fundamentally sound reasons why the consistently priced VICTOR is today's leading projector value.

To get down to fundamentals is to tip the scales in VICTOR'S favor

INFINITE PRECISION is a VICTOR Watchword. Perfect performance is not possible without it Precision alone, however, is not enough! You want, in addition, the many advancements which VICTOR has created — many of which *still are not to be had in any other equipment at any price!*

ASK ABOUT THESE NEW VICTOR PRODUCTS

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The WORLD'S FINEST 16 MM MOTION PICTURE EQUIPMENT

HERE'S HOW

by A. S. C. Members

PHOTOGRAPHING A MOVING PICTURE ON A SCREEN. "I want to photograph an audience watching a movie show and have the picture they are watching on the screen. How is this done?"

—H G J., Brooklyn, N.Y.

Professionally, this is done either by double-printing or by the so-called "Transparency Projection Process," in which a projector is placed behind the screen, electrically interconnected with the camera so that both shutters open and close together. This is difficult for the amateur, and totally impossible if he is working in a regular theatre, so the best plan is double-exposure. To do this it is necessary to make two accurate masks or mattes, which are placed at either the end of a fairly long, conical tube mounted on the lens or, if possible, mounted directly in front of the film in the aperture. One mask mattes off the area of the screen while the picture of the audience is made. Then the film is carefully rewound and exposed again, with the other matte masking off everything except the "screen." The masks must be made and mounted accurately, and the best (and most natural) results will be had if the foreground (audience) action is lit so that the greater area of the picture is quite dark.

—Fred W. Jackman, A.S.C.

EXPOSURE FOR TITLES WITH POSITIVE FILM. "What exposure shall I give when making titles on positive film?"

—R.C., Minneapolis.

The exposure in any type of photography depends upon the shutter-opening of the camera used, the area being photographed and amount of light available for illuminating the subject. The majority of home titlemakers (such as the Victor, Filmo and Cine-Kodak titlemakers) use a title-card measuring approximately 3x4 inches with two 150-Watt lamps for illumination. Under these circumstances the average exposure would be approximately f 5.5 when the title-card being photographed consists of white lettering on a dark background, and f 6.3 when the title has dark letters on a white field. The exposure would naturally be increased proportionately if the title-card were larger, and decreased if more powerful lights (photoflood bulbs, for instance) were used. There would probably be some variation, too, according to the shutter-opening of the camera. When using positive film, it is always easy to make tests, however, and to develop these tests (which need be only a few inches of film) before making the actual "take" of the title. The best developing solutions for this purpose are those which give the maximum contrast with the cleanest image. The solutions recommended for commercial process plates are excellent, as is also that compounded for developing X-ray films.

—Ernest Haller, A.S.C.

MAKING UNDERWATER MOVIES. "Can my Filmo camera be adapted to work under the water for making films of undersea life?"

—C. deM., Miami.

When acting as chief cinematographer for the recent Vanderbilt Oceanographic Expedition, I used a special diving-case for an Eyemo camera, which was built for us by an engineering firm in New York, whose name we will gladly supply you. The case was watertight, and permitted one to sight through the regular finder, and to wind the camera under water. The operator, of course, had to wear a diving-helmet, and descend with the camera. The results secured were entirely successful.

—A. L. Gilks, A.S.C.

LONG OR SHORT THROW IN PROJECTION? "I find that, for exhibiting 16 mm. films in a large lecture-hall, I can obtain the same size of picture by using either a 2-inch projection-lens at 50 feet from the screen, or a 4-inch lens at 100 feet. Which will give the best results?"

—Prof. C.S.F., Boston

Providing that you can place your projector as conveniently for the shorter throw, the 2-inch lens will undoubtedly prove more efficient. For while the size of the picture will remain unchanged in either instance, the brilliancy of the picture secured with the shorter throw will be considerably superior, especially in your case, where both the throw and the picture-size are rather large. This is due to several relatively small losses of light in transmission (spilled light, etc.), which becomes considerably magnified when both the throw and the projected image are so considerable, as well as to the pronounced loss of light incident to so great a separation of screen and light-source.

—Henry Sharp, A.S.C.

EXPOSURE AND FILTERS FOR SNOW SCENES. "Is any reduction in exposure necessary for snow scenes; and what are the best filters for use in such scenes?"

—R. C. T., Montreal, Canada.

For snow scenes, the same old rule applies that should guide photographers in any circumstances: "expose for the shadows, and the highlights (in this case, the snow) will take care of themselves." If you are using regular panchromatic film, a K-1½ filter is probably the best, if you are using SuperSensitive (which is by far preferable), the best filter is the 5-N-5. In many instances one may not need any color correction at all, but the glare from the white expanse of snow should be toned down. In such instances use simply a neutral density filter, either the 25 percent or the 50 percent, according to the amount of glare encountered.

—Dan Clark, A.S.C.

DISSOLVING SHUTTERS. "I understand that fades are made with a dissolving shutter; how is the shutter controlled during a fade; can the shutter be left at any opening for regular filming?"

—W. V., San Diego.

Practically all professional cameras are fitted with dissolving shutters, i.e., shutters whose aperture is not only adjustable, but which will automatically open or close completely while the camera is running. In practice, the shutter may be set at any desired aperture, and when the fader mechanism is engaged, the shutter will automatically close; when fading in, the shutter may be stopped at any desired aperture, by means of an indicating dial placed at the rear of the camera.

—John Arnold, A.S.C.

It's Easy to Make Fade-Outs

Continued from Page 27

fade to an opaque reddish black at the dark end It must be mentioned that in making these fades, it is necessary to make the dark end even more opaque than would seem necessary to visual inspection, because these solutions merely dye the film overall, and do not affect the contrast, if the film is insufficiently opaque, the fade will not appear complete when the film is used with one of the powerful projectors now available In some cases, it may be well to complete the fade by dipping the dark end into the dye solution for a few minutes The illustration was made, incidentally, with the solution just described

An excellent solution for making chemical fades on negative film is given in the Ives-Muehler-Crabtree report as follows

Modified Belitski Reducer

Ferric Alum	25 0 grams
Potassium Citrate	75 0 grams
Sodium Sulfite (anhydrous)	30 0 grams
Citric Acid	20 0 grams
Sodium Thiosulfate	200 0 grams
Water to	1 Liter

The solution is applied as has been described The well-known Farmer's Reducer may also be used for this purpose, but the Belitzski formula is regarded as preferable

Ives, Muehler and Crabtree have, in their article in the CINEMATOGRAPHIC ANNUAL (Vol 2), gone into rather greater detail on this subject than is possible in the limited space available for this discussion of the subject, they have also suggested valuable methods of applying the solution by progressively immersing the film in the chemical as well as by applying the chemicals by hand The procedure here outlined, however, is satisfactory for most purposes where only a relatively small amount of work is to be done

There's Continuity — Even In a Cat

Continued from Page 28

present However, she doesn't know I shot the cat running backwards, she doesn't know of the final scene where the cat gets booted out and she doesn't know the title "The Damn Cat"

Divorce papers may be in order next week

P S My wife just phoned The cat has not been home for three nights She's afraid he will not be at the premiere There's always something for which to be thankful.

Hollywood Citizen Store

● The Hollywood Citizen Store has just moved to new quarters, at 6364 Hollywood Blvd The Photographic and Cine Department, under the able management of Ray Sebastian, has been greatly enlarged

Edit With Your Camera

Continued from Page 26

faster tempo Longer, more intimate scenes, smoothly intercut, make things easily understandable very short scenes, quickly intercut, suggest haste—confusion That, of course, is the essential principle of the ' Montage Technique" of the Russians

Often, when I find myself balked by some difficult sequence I can't seem to "feel," I find that working around it—dropping it temporarily, working on something else, and then returning to start afresh—will help me Often, too, I find it a real help to jot down on paper the scenes I have to work with in such a sequence, study the list carefully, and then edit the sequence on paper before I touch scissors to the film at all On the whole, this has much to commend it to amateurs, who, since they usually use reversal film, must preserve their film as carefully as possible, and have a minimum of splices in the finished picture

Know Your Subject

Another important thing is to know—and know thoroughly—what you have to work with before you start cutting Sit down at your projector and run your film over and over again, until you are absolutely bored with it—fed up—sick of the sight of it. Then you can begin to cut it without feeling like a mother murdering her first born whenever you eliminate a scene

To my mind, the amateur film-editor has one advantage over the professional: he can always re-edit his pictures. More often than I like to think about, I've finished a picture—thought I'd done a pretty good job on it—and later viewed it in a theatre, only to find that there were half-a-dozen or more places where I could have improved the editing If our foresight were only equal to our hind-sight——! But it's never too late for the amateur to mend his picture.

This pretty well takes care of the prepared picture—the one with a well-prepared story, well-thought-out and well-rehearsed action (rehearsal is important—it saves film) but what about the picture that isn't prepared—the one you want to assemble out of the odds and ends of film you've got on hand?

Sysematize Your Work

The same general method will work very nicely—but it's harder work, for you usually have to make the story and everything as well as edit it The simplest way is to begin by screening everything you have, not once, but many times. Then make a list of it Subdivide or segregate this according to subject-matter, etc Then break your film down and reassemble it according to these classifications—and screen it again Then, knowing exactly what you have to work with, you can almost always think out some sort of a story to hang the scenes on Heaven knows, it may not be anything at all like the original idea of the scenes—but that doesn't matter, just so long as it makes an interesting picture!

CORRECTION

● In the article on the Dieterich Process for Composite Cinematography, which appeared in our March issue, it was stated that among Dr Dieterich's claims for the process was that it eliminated "projector hot-spots and unsteadiness" Dr Dieterich has requested us to state in order to rectify certain misinterpretations, that the unsteadiness referred to was that occasioned by projector faults, such as wandering of the arc, and not, of course, that occasioned by an unsteady print ED

Horkheimer For Councilman

● E D Horkheimer, one of the pioneer producers in the motion picture industry, has entered the spring Councilmanic race in Hollywood, being a representative from District No 2 Horkheimer needs no introduction to the industry nor any press agent adjectives to prove his fine qualifications.

Ray June, A.S.C., "Covers the Waterfront"

● Ray June, A.S.C., has been signed as Chief Cinematographer for Edward Small's Reliance production, "I Cover the Waterfront," now being made at the United Artists Studios. Ben Lyon and Claudette Colbert are featured, with James Cruze directing.

Evolution of Cinema Tripods

Continued from Page 7

tubular auxiliary braces. In actual use, the tripod is moved about on this wheeled undercarriage until it is in the exact position desired; then the wooden legs are adjusted, and the weight of the camera is transferred (by means of the screw-jack hoist) to the rigid wooden legs. The same procedure is followed when it is desired merely to raise or lower the height of the camera for a given shot. In some designs the wheeled undercarriage is a removable auxiliary unit, while in others it is an integral part of the assembly.

The friction head of the Paramount design employs large friction-bearings with adjustable tension for the pan and tilt movements. In addition, the tilthead is counterbalanced by two heavy coil springs, which serve to maintain the head in a normal, level position unless it is deliberately forced up or down. The head may, of course, be locked in such abnormal positions, but when the locks are opened, or the disturbing pressure removed, the springs automatically return the head to the medial position.

Sound Changed Design

At this point, note must be made of a basic change in tripod-head design which has occurred since the introduction of sound. In all of the earlier tripods the camera was fastened to the tripod by means of a screw or—as in the Bell and Howell—by a dove-tailed slide. In practically all of the recent designs however, the weight of the camera-blimp assembly has been considered sufficient in itself for this purpose; the top-plate of the tripod-head has been greatly enlarged, and usually pierced with two or three half inch holes, into which fit corresponding pegs on the base of the blimp. A similar method has been used in many instances for attaching the tripod-heads to the tripods. This is, of course, a great time-saver in these days when heavy blimps must be quickly transferred from tripod to crane or dolly, or to a baby tripod or "high hat." In this latter connection, the development of baby tripods and "high hats" alone furnishes a deal of interest. Obviously, the previous types, intended to support only the relatively light cameras of silent-picture days were inadequate for quarter-ton blimps; therefore a wide variety of new designs was created. The Paramount baby tripod, (illustrated) is typical. It consists of a rigid, spider-legged casting of aluminum, designed at the top to take the studio's regular blimp-type friction head, and fitted with short, double-extension tubular legs. It covers a range of from approximately 18 inches to nearly three feet in height. Paramount's blimp "high hats," on the other hand, are merely short, adjustable tubular structures with a plate at one end to take the tripod-head, and another at the bottom which may be nailed to the stage floor or any other suitable support. They are often clamped onto perambulators for low-angle dolly shots.

The other type of blimp tripod in general use today is the MGM-Mole-Richardson design. This was originated by John Arnold, A.S.C., head of the Camera Department at the Metro-Goldwyn-Mayer Studio, and built in considerable numbers in the MGM shops. In collaboration with Mr. Arnold and MGM, the Hollywood firm of Mole-Richardson, Inc., later adapted and refined this design, placing it on the market as the Mole-Richardson Rolling Tripod. Many of these are at present in use in the Universal, R-K-O-Pathe, Educational, United Artists, and other local studios, and to a considerable extent in many studios abroad, not to mention in the plants of the majority of industrial film producers.

Original MGM Tripod

In the original MGM design, this tripod consisted of a rigid triangular frame of steel tubing reinforced midway by a Y-shaped casting. At each corner of this triangular frame was mounted a small caster-wheel and a tubular metal leg or foot, which was screwed down to lift the weight of the tripod off the casters when a scene was being made. The actual legs of the tripod extended upward from the corners of this triangular frame, and consisted of six extensible steel tubes, each of which was fitted with a quick-release locking device. A large portion of the weight, together with all of the stresses of raising or lowering the camera, was borne by a helical hoist extending from the centre of the Y-shaped reinforcing member up to the tripod-head. This hoist was operated by a crank. The tripod-head itself was of the hand-crank-operated type, ball-bearing throughout, and fitted with an exceptionally large bed-plate upon which the blimp was mounted.

The Mole-Richardson adaptation of this design retains all of the salient features of its progenitor, but is refined to permit the device to be used as a perambulator as well as a conventional tripod. The caster-wheels have been supplanted by large, cast aluminum wheels, fitted with oversize, airplane-type pneumatic tires. The two forward wheels are on a conventional, solid axle, while the rear one casters, and is fitted with an extensible handle. The supporting feet are fitted with disc shoes. The rear end of this tripod has been elongated

in order to provide seats for the operative cameraman and his assistant, as well as brackets for lamps The hoist is in this design operated by a large, horizontal hand-wheel, and the head-mechanism is practically unchanged from the MGM design, though considerably enlarged

Fast Panning Isn't Your Fault

Continued from Page 22

look at every individually different point or object, (unless it is smeared or out of focus and if he cannot fix an instant upon each one to see it clearly, he will experience a very unpleasant eye strain This may be demonstrated in a more familiar manner by making the same pan shot at the same speed, first with a short focal length lens and then a long focal length lens Although both lenses are capable of taking in the same angle, the fact is that in using the same film area for both limits the long focal length lens to a more restricted area and compels the observer to fix on every different point or object individually during the panning of the camera The difference of the apparent speeds on the screen of the two lenses is well known

After making these simple tests you will probably be greatly surprised at two things, surprised at the number of individually different points or objects there are in the average short pan shot, and surprised at expecting anybody to be able to see them in the average good pan shot

Cameramen Need New Viewing Glass

Continued from Page 9

What is needed is a glass that will give results in the monotone similar in view to the neutral density filters It should be like looking thru heavy smoked glasses, dark and without color, with perhaps a combination of glasses when using filters, or maybe a different glass for every type of film because certainly the results are different, in various kinds of film Maybe such a glass could be embodied in finder lenses Such a glass would be welcomed by all persons interested in photography, the professional as well as the amateur, the scientist as well as the layman, the expert as well as the novice Such a glass would eliminate all guess work as to the results obtained Such a glass would also be welcomed by other studio employees, such as set painters, set dressers, art departments, designers and dressmakers, directors and almost everyone connected with both still and motion picture photography

We need a neutral glass that will correctly translate color into black and white

Speed and Fog

Continued from Page 14

is made to fog Fog may be considered as an actual density which has arisen from sources other than intentional exposure to light It may be considered under two general headings, first, inherent fog, and second development fog Inherent fog may be the result of certain of the silver grains being made developable by the chemical processes involved during the manufacture of the emulsion Also this inherent fog may be due to a slight exposure of the emulsion to light during some stage of the handling of the film, either prior to or subsequent to its exposure in a sensitometer or camera Under either of these conditions upon development the unexposed areas will be observed to contain developed silver grains and this amounts to fog and is actually measurable in a densitometer

Various Causes of Fog

Development fog arises from such various causes as the action of fogging agents or reaction products in the developer, aerial oxidation etc It is easy to see, therefore that fog is an unintentional sensitometric constant but must be taken into consideration when precisely determined values of density are desired which result from definitely known exposures

From a purely practical standpoint no particular attention is paid to fog unless it gets beyond accustomed grounds For example, in the development of positive film a fog value of 03 to 05 is quite normal and unless fog builds up beyond this limit it is absolutely disregarded However, when fog is noticeable visually it plays a certain detrimental part in the photographic processes and steps are immediately taken to prevent further fogging action, whether it be from extraneous exposures or from chemical action in the developer

A great deal of work has been done on the general subject of fog but it does not seem necessary to go into the theoretical considerations of this subject in this article

Wheels of Industry

Continued from Page 18

built-in splicer which is also a part of the standard equipment

An interesting feature of the splicer is that it is heated to a given temperature to insure quick and positive bonding of film

Available as an extra item is a small film pack camera which attaches to the editor in place of the prism The camera is complete with film pack adapter, ground glass and camera lens It is of the fixed exposure type

16 mm. Tripod for Hand Shots

● ACCORDING to an announcement from Wm. J Grace of Dallas, Texas, he has designed and is marketing a tripod which he has named Beltipod As the name indicates, it has a contrivance that fits over the belt with a rod running up to about chin level, with another adjustable rod in that and a tripod-screw at the top on which to fasten the camera By means of this the camera is always held steady at the same height and the panning is done smoothly by slowly moving the body Undoubtedly the possession of the Beltipod for many who took recent pictures of the earthquake in South-

ern California would have been a great boon judging from the results of some of the efforts viewed.

Victor 16 mm. Sound-on-Film Projector

● According to an announcement from the Victor Animatograph Corp., their Victor Sound-on-Film head has been condensed to a single unit measuring only approximately 4"x6"x3". This unit attaches to the under-edge of the body of the Victor Projector at a position just below the sprocket and projection lens. It does not interfere with tilting or any other regular functions of the projector. In case of attachment to Victor Silent Projectors now in use, it will, of course, be necessary that the projector mechanism be converted from the 16 frame per second speed to the talking picture speed of 24 frames per second.

Provisions are being made to permit the use of the Victor Continuous Projection attachment and of the Victor Intermediate Take-Up Unit, which accommodates 800 and 1600 foot reels, with the Animatophone.

Zeiss F 0.85 Lens

● The Carl Zeiss Jena Optical Works have invented a new rapid photo lens with a guaranteed relative aperture of 0.85. It is primarily intended for X-ray cinematography.

The new Zeiss R-Biotar, with its extraordinary aperture of F/0.85, consists of five components. It is nearly three times as fast as the ultra-rapid Zeiss Biotar F/1.4.

It is available in 45 mm. focal length for 16 mm. cine cameras in normal mount without iris. For standard cine films a longer focal length will shortly be available.

Consolidated Film Reports Profit

● Consolidated Film Industries, Inc., and subsidiaries report a net profit of $862,228, equal after all charges and dividends on the preferred stock, to 12 cents a share on the common for the year ending Dec. 31, 1932. This compares with a net of $1,303,561, or 96 cents on the common, for the year 1931.

New Bell & Howell Printer

Continued from Page 11

requirements Since both the sound and the picture records are printed simultaneously, this feature alone insures, per unit of time, double the output of the B & H Model D Printer

The threading of the films is also done more rapidly than in the older type machine, mainly because only the positive film is threaded for each successive print The negative is threaded once for the whole run of printing, thus requiring only one set-up for any number of prints to secure synchronization between sound and picture records

(b) One of the most important features of the new printer is that all films—negative, light change mattes, and positive—are automatically, thoroughly cleaned just before entering and after leaving the printing gate, passing through special inclosed cleaners

Protecting the Negative

Further insurance against accidental deterioration of the negative and mattes film is secured through the fact that they are constantly inclosed in an air tight, dust proof compartment equipped with glass doors so that they are always visible though fully protected

The thorough cleaning of the films, coupled with the previously expressed fact that they run at the printing gate between two cushions of compressed air, eliminates entirely the scratch and abrasion evil.

(c) Further protection against film waste is secured by safety devices which are a feature of the design of the apparatus If anything should occur that would hamper the proper running of the machine, such as faulty perforations, giving way of splices, or burning out of either printing lamp, the machine will immediately and automatically stop, and the operator in charge is thereby warned that investigation is needed. Loss of film in such cases is reduced to only a very few inches.

(d) The fully automatic operation of the machine relieves the strain imposed upon the operator by the constant attention required by the non-automatic or the semi-automatic types of printers Further, it permits one man to attend to more than one machine at the same time Automatic lubrication is an important factor

Assignment Takes Ross Fisher to Mexico

● Ross Fisher, A S C, found himself Mexico bound on his latest cinematic assignment. What the nature of the picture is, and to what points of this Latin Republic Ross hied himself still remain a secret

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Eastman Kodak Stores, Inc 643 So Hil Street
Educational Projecto Film Co, 317 N Fair fax
T Iwata Art Store 256 East First St
Lehnkering Pharmacy, 1501 N Western Ave
E B Nichols, 731 South Hope St
Victor Animatograph Corp, 650 So Grand Ave
Tappenbeck & Culver, 10958 Weyburn Ave, Westwood Village
North Hollywood Studio City Pharmacy, 12051 Ventura Blvd
Pasadena The Flag Studio 59 East Colorado St
Richard Fromme, 965 S Fair Oaks
A C Vroman 329 East Colorado St
Richmond La Moine Drug Co 900 Macdonald Ave
San Diego Harold E Lutes 958 Fifth St
San Francisco Eastman Kodak Stores Inc, 216 Post St
Hirsch & Kaye, 239 Grant Ave
San Francisco Camera Exchange 88 Third St
Schwabacher-Frey Stationary Co, 735 Market St
Sherman, Clay & Co Kearny & Sutter Sts
Santa Barbara J Walter Collinge 1127 State St
Stockton The Holden Drug Co Weber Ave & Sutter St
Logan Studios, 20 N San Joaquin St

COLORADO

Denver Eastman Kodak Stores, Inc, 626 Sixteenth St.

CONNECTICUT

Bridgeport. Harvey & Lewis Co, 1148 Main St
Hartford Watkins Bros, 241 Asylum St

ILLINOIS

Chicago Almer, Coe & Co, 105 N Wabash Ave
Associated Film Libraries, Inc Suite 224, 190 N State St
Bass Camera Co, 179 West Madison St
Central Camera Co, 230 S Wabash Ave
Eastman Kodak Stores, Inc, 133 N Wabash Ave
Fair, The Camera Dept, 7th Floor, State-Adams-Dearborn Sts
Springfield Camera Shop, The 320 S Fifth St

IOWA

Sioux City Lynn's Photo Finishing, Inc, 419 Pierce St

KANSAS

Wichita Jack Lewis Film Service, 329 Sedgwick Building

LOUISIANA

Monroe Griffin Studios P O Box 681

MARYLAND

Baltimore Eastman Kodak Stores Inc, 309 N Charles St

MASSACHUSETTS

Boston Eastman Kodak Stores Inc 38 Bromfield St.
Iver Johnson Sporting Goods Co, 155 Washington St
Pathescope Co of the N E Inc, 438 Stuart St
Pinkham & Smith Co 15 Bromfield St
Braintree Alves Photo Shop 349 Washington St
Cambridge E M F Electrical Supply Co 430 Massachusetts Ave
Springfield Harvey & Lewis Co, 1503 Main St
Worcester Harvey & Lewis Co, 513 Main St

MICHIGAN

Detroit Crowley Milner & Co
Detroit Camera Shop 424 Grand River W
Eastman Kodak Stores, Inc, 1235 Washington Blvd
Grand Rapids Camera Shop Stores Inc, 56 Monroe Ave
Photo Service Shop 44 Monroe Ave

MINNESOTA

LeRoy Ivan E Meyers Home Movie Service, 215 W Main St
Minneapolis Eastman Kodak Stores, 112-116 So Fifth St
National Camera Exchange, 5 South Fifth St

MISSOURI

St Louis Eastman Kodak Stores, Inc, 1009 Olive St

MONTANA

Bozeman Alexander Art Co

NEBRASKA

Omaha J G Kretschmer & Co 1617 Harney St

NEW JERSEY

East Orange Edmund J Farile Jr, 45 N 19th St
Union City Heraco Exchange, Inc, 611 Bergenline Ave
West New York Rembrandt Studios, Inc, 526A Bergenline Ave

NEW YORK

Binghamton A S Bump Co, Inc, 150 Washington St
Brooklyn Geo J McFadden Inc, 202 Flatbush Ave
Buffalo Buffalo Photo Material Co, 37 Niagara St
New York City. Wm C Cullen, 12 Maiden Lane
Eastman Kodak Stores Inc, 356 Madison Ave at 45th St
Gillette Camera Stores, Inc, 117 Park Ave
Herbert & Huesgen Co, 18 E 42nd St
Mogull Bros Electric Corp'n, 1944 Boston Road, Bronx
Sibley Lindsay & Curr Co
New York Camera Exchange, 109 Fulton St
Times Building News Stand, Inc, Times Building
Willoughby's, 110-112-114 West 32nd St
Rochester Marks & Fuller, Inc, 36 East Ave
Smith, Surrey, Inc, 129 Clinton Ave, South
Schenectady. J T. & D B Lyon, 236 State St.
Syracuse. Francis Hendricks Co, Inc, 339 So Warren St
Utica Edwin A Hahn, 223 225 Columbia St

ONIO

Canton Ralph Young News Agency
Cincinnati Eastman Kodak Stores, Inc, 27 West Fourth St
Huber Art Co, 124 Seventh St W
Salem Butcher's Studio, 166 South Broadway
Toledo Gross Photo Supply Co, 325 Superior St

OREGON

Pendleton J T Snelson 608 Gardner St
Portland Eastman Kodak Stores, Inc, 345 Washington St.

PENNSYLVANIA

Erie Kelly Studios, 1026 28 Peach St
Lancaster Pugh's Art Shoppe 33 W King St
Langhorne National Entertainment Service 360 Bellevue Ave
Philadelphia Klein & Goodman, 18 South Tenth St.
MacCallum Stores, 1600 Sansom St
Williams, Brown & Earle, Inc 918 Chestnut St
Pittsburgh Eastman Kodak Stores, Inc, 606 Wood St
Wilkes Barre Ralph DeWitt, 2 South River St

TENNESSEE

Nashville Geo C Dury Co, 420 Union St

VERMONT

Burlington G W La Pierre's, 71 Church St

WASNINGTON

Seattle Anderson Supply Co, 111 Cherry St

WISCONSIN

Milwaukee Eastman Kodak Stores, Inc, 737 N Milwaukee St
Photoart House The 226 West Wells St
Phillips Jakoubeks', 132 N Lake Ave

AUSTRALIA

Melbourne McGills Agency, 179-218 Elizabeth St

CNINA

Canton International Book Co, 269 North Wing Hon Road

NAWAII

Honolulu Eastman Kodak Stores, 1059 Fort St

INOIA

Bombay Continental Photo Stores, 255 Hornby Road
P C Eranee Sons, Albert Bldgs Hornby Road
Calcutta Photographic Stores & Agency Co 154 Dhuramtolla St
M L Shaw, 5/1 Dhuramtolla St
Lucknow Lucknow Commercial Co, 25 Aminabad Park

MEXICO

American Photo Supply Co S A, Av F 1, Madero, 43, Mexico, D F